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 FROM THE EDITOR
**You too can be a publisher**

In this issue we explore the theme of publishing on pixels and paper. While it might seem like a topic geared to the printing or graphic arts industry, it also has widespread implications in our everyday lives.

Have you noticed, over the past couple of years, the number of people who have created personal Web sites, or some sort of family history volume? That's publishing at a level accessible to anyone with a computer and printer, or a computer and some basic skills in Web page design. Computer technology is giving us the tools to break away from the model of publishing as it's been defined for most of this century.

With mainstream media, a few people control what is published on paper, or broadcast on TV, or aired on radio. A healthy, if smaller underground has grown up to challenge this media establishment. However, even alternative media eventually start behaving like the establishment, with editors or producers wielding the power to decide what will be produced and what will not.

For an individual with something to communicate, a barrier is a barrier, whether it is raised by a the editorial board of some hugely successful media empire, or by a producer of a 'zine with a circulation of 50, or the economics of printing. Through the ages, there have always been people who have said "I have something legitimate to say." Today we have both the affordable tools and the affordable media to publish what we want, even if it is for an audience of one.

So, we have people putting up Web sites hosting poetry and short stories; photo essays and paintings, audio and video productions and everything else wild, wacky and sublime. Is it all good? No, but it's not all bad either. And more importantly, it is letting loose a new wave of creativity that is most definitely having an impact on established media.

Tired of the style of existing literary magazines, one of our contributors, Linda Richards, and a friend created an online literary title called January Magazine (http://www.january-magazine.com). Richards says the e-zine allows her to control what goes in, as well as how the

subject matter is treated. Editors of paper-based literary magazines are convincing their publishers to invest in experiments like this.

The global village talks back

While creating an online magazine might be too ambitious for many, creating a personal Web site is not. And "personal" is the key concept here. Some people have no greater ambition than to post the latest picture of their child so that relatives on the other side of the county can track the development of a relative they may never have actually met.

But this personal information is also publicly accessible on the Net, which causes some interesting activity on the borders separating private and public. Recently, my wife pointed me to a SchoolNet site, which contained historical information on Southern Alberta, where my grandparents settled at the turn of the century. The descendants of one of my grandparent's contemporaries had posted a family history, along with some historical photographs. As I browsed the photos I bumped into my own past. Among the faces in the pictures relevant to this other family were my grandparents, uncles and aunts, and even my own father. What I once regarded as private images were now public.

When the term global village was coined, it was in reference to media, mainly TV, extending our senses to places we'd never visited. Even before the Internet, we were virtual travelers, using TV as a window on the world at large. But TV's view was always a bit sterile, allowing us to see and listen, but not to be seen or heard. The Internet creates an interactive global village. Not only can we see family, friends and strangers in communities on the other side of the Earth, we can actually communicate with members of that community, learn about the local scene, and perhaps read the local newspaper. We could even write a letter to the local newspaper if we chose to do so.

The community standard: which community?

Thus, the Internet has become a chaotic mix of personally relevant and personally insignificant information, all thrown together in a publicly accessible medium. The challenge has become finding a way to sort out the relevant from all the rest.

Within the established publishing model, a gatekeeper function exists, where editors and pro-

ducers, with their decisions, dictate the content an audience will receive. This happens within a social, legal and moral context.

If you look at a specific example like censorship, the social/moral backdrop is partly defined by what is referred to as the community standard.

With thousands of people becoming their own publisher, the old publishing model falls apart in two significant ways. First, because the gatekeeper function is largely eliminated, you find that people are throwing up all kinds of content, including some pretty raunchy sites. Secondly, the so-called community standard is short-circuited because the virtual community is not subjected to the social dynamic that exists when people with diverse views are thrown together in a common geographic locale.

This means, for one thing, that the local constabulary can no longer march in and shut down the local bawdy shops, 'cause they ain't local any more. For another thing, when people don't agree with the topic, mood or ideological bent of a virtual community for example, a newsgroup or special interest Web site it is easier to "run them out of town" in a virtual community by flame bombing them. Moreover, people are more apt to acquiesce or simply leave the virtual community if it is not agreeable to them. It's hard to imagine what our real-world communities would be like if this had been our stock response to the many social problems we've faced in our history.

Rather than virtual community building, we turn to Internet site blockers. These are programs that allow a user to restrict various categories of sites according to keywords, content, etc. This is a mechanism that keeps out the stuff we don't like. It doesn't address the larger issue of whether or how we should confront the stuff we don't like.

It's often said that Canadians believe in peace, order and good government, while Americans believe in life, liberty and the pursuit of happiness. We have more control over our government via media and the democratic process than we have over our virtual communities. As we begin to live in virtual communities, or at least as we become more affected by them, our individual responses should be as important as the shepherding we demand of governments on our behalf.

Interesting times ahead.

David Tanaka, Editor

 LETTERS
Convergence consmergence

Your article (*All Together Now*, Feb. '98) on convergence was well-written and informative, but quite narrowly focussed on the technological aspects of this interesting phenomenon, and failed to pay much attention to the human dimension. Since growth and change in this area are obviously going to be intensely market-driven, any fairly complete attempt at foreseeing the future that fails to take social, psychological, and practical human considerations into account will end up missing the mark by a wide margin.

Would you buy a combination frying pan/toilet/power drill? (Many of the nerds that I know would, just for the heck of it!) Of course not! The silly thing would be about as useful as a combination telephone/television/computer. None of the above tools (in the broader sense of the word) are particularly good candidates for convergence on the functional, user-interface level, because the operations that they are called upon to perform are so radically different.

For example, the modern telephone is light, compact, highly portable, and very simple to use, as well as dirt cheap. Any changes in the direction

of convergence with (say) a computer that compromise any of these attributes will run into considerable consumer resistance. Can you imagine the frustration that would ensue if an important business call came through on a device that was also being used by a family to watch a good movie or major live sporting event? Even with full multitasking, the situation would be a pain in the you-know-what for all concerned.

This is not to deny the merits of convergence at a level one step removed from the tool that is actually being made use of. Quite obviously, this is taking place right now at a rather unsophisticated (from the user's viewpoint) level with the telephone, with all of its recent "added features." If the hardware and software needed to run many applications simultaneously was tucked away somewhere (in the home or office, or remotely), and if the "terminals," in the form of telephones, televisions, radios, work stations, sex machines or whatever were easily plugged into a standard digital interface, then the possibilities of convergence might come to bear real fruit. If one starts to think in terms of "servers" rather than stand alone units, then the whole thing starts to make a

lot more sense.

This would allow the whirring, buzzing, electromagnetic field creating a monstrosity that is the modern computer body to be parked away in the furnace room or some such place, where it belongs. It would also allow the production of all sorts of interesting, inexpensive, brainless digital appliances to be plugged in all over the house or office, to become as ubiquitous as electric lights.

Also, this sort of arrangement would mean that a location would only require one good central computer, capable of carrying out many duties at once, or a good quality (and almost certainly dedicated and fibre optical) connection to a remote computer. This would allow for considerable economies of scale, and greatly simplify things. (And heaven help the poor souls depending on it all when the inevitable crashes occur.)

Onward, brave new digital world! I could go on and on, but you've probably got the idea by now.

Don W. Scott

Continued on page 8



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PUBLISHER / EXECUTIVE EDITOR J. David Ritter, dritter@tcp.com
ASSOCIATE PUBLISHER Hari Singh Khalsa, hari@tcp.ca
ASSOCIATE GENERAL MANAGER WEST Judy Prange, jprange@tcp.ca
EDITOR David Tanaka, david@tcp.ca
ASSISTANT EDITOR Megan Johnston, megan@tcp.ca
TEST LABS Steve Halinda, Tim Bingham-Wallis
CONTRIBUTING EDITORS Geof Wheelwright, Jeff Evans
PRODUCTION MANAGER Sari Prelutsky, sari@tcp.ca
PRODUCTION Jason Edmunds, Karin Hartwig, Jana Kolar, Alexandra Morris, Ernest Stelzer
FOUNDING PUBLISHER / EDITOR Douglas Alder

VANCOUVER OFFICE

503-425 Carrall St., Vancouver, BC V6B 6E3 Phone: (604) 688-2120
Fax: main (604) 688-4270, accounting 688-7063, press releases 688-4680
BC AD SALES Dyal Singh Khalsa, Kit Griffin, Jennifer Fitzgerald
(604) 688-2120, bcsales@tcp.ca
CIRCULATION MANAGER (604) 688-2120

PRAIRIE OFFICE

The Devenish Bldg, Suite 306, 908 17 Ave. S.W. Calgary, Alberta T2T 0A3
Calgary Direct, Phone: (403) 228-3355, Fax: (403) 228-3456
Alberta, Sask., & Manitoba: 1-800-407-3355, Fax: 1-800-695-1155
SALES MANAGER Suzanne Fitzgerald, suzanne@tcp.ca
AD SALES Frank Howie, fhowie@tcp.ca
WINNIPEG AD SALES Suzanne Fitzgerald, Frank Howie
Phone 1-800-407-3355, Fax: 1-800-695-1155
PRODUCTION MANAGER Liz Van Der Wee, liz@tcp.ca
PRODUCTION Tanya Lee Chee, tanya@tcp.ca
CIRCULATION MANAGER John Gogol, johng@tcp.ca

TORONTO OFFICE

99 Atlantic Ave., Suite 200, Toronto, ON M6K 3J8
Phone: (416) 588-1580, Fax: (416) 588-8574
ASSOCIATE PUBLISHER & GENERAL MANAGER Frank Shoniker, fshoniker@tcp.com
TORONTO SALES MANAGER Tino Wong
TORONTO AD SALES Rob Crawford, Joanna Dickie (assistant),
Sarmistha Roy (sales & distribution assistant), onsales@tcp.com
PRODUCTION MANAGER Andrea Jardim, andrea@tcp.com
PRODUCTION Helga Stitt, Nella Pascal, Ted Russell
CIRCULATION MANAGER Charles Oliver, charles@tcp.com
ONTARIO, QUEBEC, ATLANTIC INFO 1-800-465-3517

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Phone: (514) 843-4770, Fax: (514) 843-3484
ADMINISTRATOR & CIRCULATION Melanie Larivee, distrib@quebecmicro.com
MONTREAL AREA SALES Bill Lawson, mtlsales@tcp.com
PRODUCTION Pierre Guay, prod@quebecmicro.com

OTTAWA OFFICE

303-260 St. Patrick Street, Ottawa, ON K1N 5K5
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OTTAWA OFFICE MANAGER Chris Miller, cmiller@tcp.ca
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Phone: (416) 588-1580, Fax: (416) 588-8574
PRESIDENT J. David Ritter, dritter@tcp.com
EDITORIAL DIRECTOR Graeme Bennett, graeme@tcp.ca
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MIS MANAGER Joshua Paul, joshua@tcp.ca

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letters@tcp.ca editorial@tcp.ca classifieds@tcp.ca

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LETTERS

Continued from page 6

GB relies: I see your point and I'm sure that there are some waiting for just such a server-based home.

However, I have a combination "telephone/TV/computer" and it works very well for me. It is actually more of a combination "voice and text messaging/information gathering appliance/scanner/OCR and voice recognition station/ video capture and playback system/3D games console /computer/stereo/signal processing console/etc."

Yes, I still use a standard phone, but it, too, is hooked up to the system unit so that the computer can dial the phone, send faxes, etc. Convergence works for me and reduces costs as long as I take care to keep the "geek factor" down.

Radio on the Web fan

I read with great interest the article *Radio on the Web* in the March issue of TCP. I myself enjoy listening to a radio station in Australia, it is very

interesting to hear all the news and the latest that is happening there. I think radio is probably one of the best things that has happened to the Internet. In February, Jagged Internet works in association with the BBC and Real Player to broadcast live coverage of the cricket match between England and the West Indies from Port of Spain, Trinidad. The audio was excellent, with live video stills every five seconds.

True, there were some frequent cut outs but

over all it was an excellent feat. And I greatly appreciated being able to listen and watch this coverage live.

Amral Khan

A business resource

Thanks to your paper I have saved a tremendous amount of time and money setting up my business. Great articles. Keep up the excellent work!

Johanna MacDonald

The real crime in Last Byte

In the March *Last Byte* column, Jeff Evans quotes Baudelaire ("Behind every great fortune there is a great crime") and promptly proceeds to ignore the crime. He gushes about all the mistakes of Microsoft's competitors (true), the missed opportunities by many in the marketplace (true) and the brilliance of Bill Gates (debatable).

What he fails to discuss are those very practices that have been objected to for years: the requirement that every PC manufacturer include DOS, Windows 3.x or Windows 95 (depending on the era) on every machine sold. This is true to the point where it is almost impossible to order a machine with a bare drive and NOT pay a licence fee to Microsoft for an operating system that one does not want. (If you don't believe this, try it!)

In any culture this is a practice which is anti-competitive. This is Microsoft's great crime. By wielding the market dominance it gained with DOS, it pushed an inferior system (Windows 3.x) onto the market and sold it as a "perfect" environment. Well, of course it was—it was the only one possible to get in the Intel world because they used their power to coerce the manufacturers into providing ONLY their product (or one still had to pay them anyway...).

Now, it pushes Win 95, a bug-ridden, crash-creating, sloppy and bloated operating system patched onto DOS as the new "perfect" environment. And what happens? Because of its market dominance, the same situation has occurred. Ask most home users a question about OSes and the answer will be "Win 95." Just because something is popular doesn't mean it's good.

That is the real result of this crime: we have a non-competitive market with an inferior operating system dominating it, little choice, and no real motivation for anyone (anymore) to take on the behemoth. Sad, but true.

Don Hobbsawn

JE replies: I don't think that I ignore the "crime" of Microsoft's near-monopoly. However, it may be worth noting that even at this late date there are still "alternatives," (and I use the term very loosely, because they are even less desirable than DOS/Windows in various ways), such as LINUX and OS/2. In both of those alternative operating system's cases, those alternatives have some nice features, but whatever their theoretical virtues, they lack a third-party software library anywhere near the size of that which surrounds Windows.

In many parts of the world, where software copyright observance is very weak, many local PC clone makers don't buy official licences for DOS or Windows for the PCs they sell. The sales of PCs are much larger in those markets than the sales of legal licences for all PC operating systems combined. In an environment of rampant software piracy, clone makers can put any compatible OS they want onto their PCs, and end users have similar freedom as to what operating systems they choose to steal and use. And guess what? Where Microsoft's ability to put pressure on PC makers is nil, and where people have the ability to steal their OS of choice, they choose to steal the "monopoly" OS.

Part of the logic of choosing Windows may be circular ("everybody else is using it, so I'll use it"), but mostly it's simple—all the best third-party applications software is available for Windows.

The best alternative to the Microsoft crime would have been for Apple to have ported the Mac OS to Intel PCs a decade ago. For reasons of Apple's stupidity, incompetence and greed this wasn't done. Too bad for all of us.

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ITU drafts 56Kbps modem standard

BY BOB WOODS

GENEVA, Switzerland (NB)—The International Telecommunications Union (ITU) says the new technical specification recommendation for pulse code modulation (PCM) modems that can achieve downstream speeds of up to 56Kbps will be designated "V.90"—replacing the earlier "V.pcm" designation.

V.90 modems are designed for connections that are digital at the Internet service provider's (ISPs) or online service provider's end. Download speeds, or the data stream coming from the ISP to the user's computer, can achieve 56Kbps, while upstream speeds from the user to the ISP can reach up to 33.6Kbps.

The V.90 modem harmonizes the two competing proposals submitted last year: "x2" from 3Com and "K56flex" from Lucent Technologies and Rockwell International.

ITU's next step for the new 56Kbps standard is to formally ratify it at another meeting in September. But the final vote is usually just a formality, Newsbytes notes.

New modem products based on the draft standard should be available from both companies within a few months. Modem manufacturers are able to build standards-compliant modems before the standard has received formal ratification because the technical

aspects of a determined standard are now frozen with the preliminary okay, 3Com officials said.

Manufacturers of modems that have used the x2 or K56flex technologies have promised software upgrades to the new standard. That same pledge has been made to Internet service providers (ISPs) and others who have used the older proprietary 56Kbps technologies, and will use the new standard. Previously, x2 modems could not "talk" with modems equipped with K56flex at 56Kbps-class speeds, Newsbytes notes.

The 56Kbps arena has seen a lot of action since companies began shipping modems based on either x2 or K56flex, but some consumers have been wary of buying modems based on the incompatible technologies.

The high-speed 56Kbps analog technology works best with applications that need fast downloading speeds, like surfing the Internet. Applications like videoconferencing, which need a fast dual-directional path, are better suited for technologies like integrated services digital network (ISDN).

Interoperability tests complete

In mid-February, 3Com and Rockwell announced that they successfully completed interoperability testing of their respective 56 Kbps-capable modems based on the V.90 specification.

Officials from both companies, at a joint news teleconference, said true interoperability between 3Com and Rockwell Technologies allows for compatibility across the 56Kbps industry and is expected to spur market growth.

Engineering teams from 3Com and Rockwell engaged in interoperability testing during the weeks following the determination of V.90 standard. The testing saw each company providing access to servers for reciprocal dial-in, connecting, training and passing data.

3Com and Rockwell officials said their products would be able to "talk" to V.90 modems, along with earlier 56Kbps modems based on their respective proprietary modem technologies. In other words, 3Com V.90 modems will communicate with other V.90 units, along with x2 technology-based modems; Rockwell V.90 units will talk to other V.90 models and K56flex modems. This arrangement not only applies to modems on the consumer/user end of the phone connection, but to the ISP and online service end as well, officials have said in the past.

Shipping

The day after announcing completion of the interoperability tests, 3Com said that it is already shipping V.90-based modems—the first company to do so, officials claimed. 3Com's V.90 analog modems include an in-

house developed line-probing sequence that more accurately predicts phone line conditions, officials said. Though the initial connect speed of a V.90 call may appear to be lower than an x2 modem call, the throughput may actually be higher. Line-probing sequence technology will provide 3Com customers the most stable and consistent performance in real-world applications, 3Com claimed. □

Contact:

3Com, <http://www.3com.com>

or <http://www.usr.com>

Rockwell, <http://www.rockwell.com>

HotBot adds reviews database • NB—

Wired Ventures says its HotBot search engine now represents "the world's largest editorially reviewed directory of Web content, along with the Web's largest and best-rated search engine." The company has combined its search engine with the review database of Look Smart for the new service. The directory allows users to begin their searches in general subject areas, such as business, politics, and entertainment, and drill down through menus for more specific information as needed.

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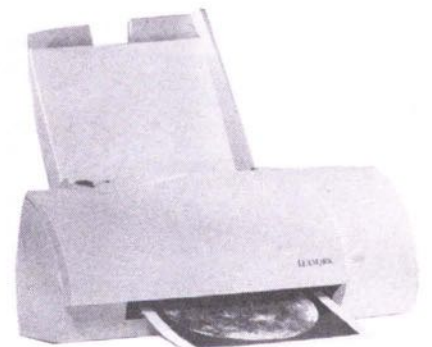


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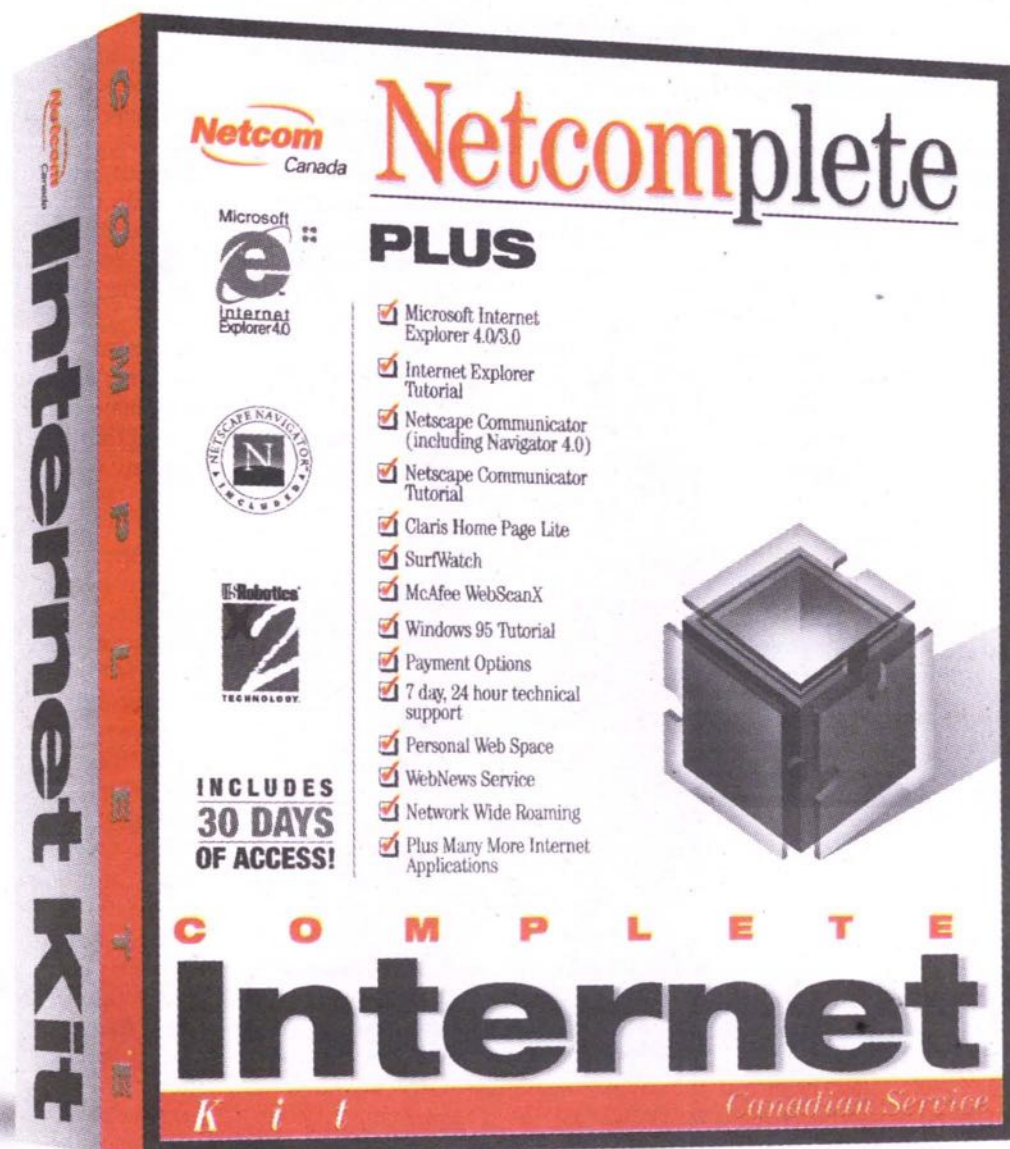
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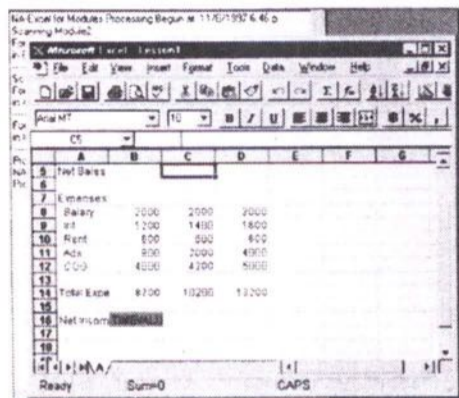
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WHAT'S NEW

Excel add-in fights Year 2000 problem

• New Art Technologies in New York has developed an Excel spreadsheet utility that searches through workbooks and highlights date-related references that might be problematic.

Called NA-Excel, the utility operates from within Microsoft Excel, but will also handle



	A	B	C	D	E	F	G
1	Net Sales						
2	Expenses						
3	Salary	2000	2000	2000			
4	Rent	1200	1400	1800			
5	Utilities	800	900	900			
6	Ad	800	2000	4000			
7	COG	4000	4200	5000			
8	Total Expense	8700	10200	13200			
9	Net Income						
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Lotus 1-2-3 and Quattro Pro spreadsheets. According to the company, the search table contains 100 date-related references, but users can add more, or can change search criteria to use the utility to highlight other data.

NA-Excel is available from the company for US\$195. Evaluation software can be downloaded from its Web site.—DT

Contact: New Art Technologies, 212-362-0559, <http://www.business-america.com>

Armor for your CDs • Digital Armor of Calgary has developed a system that allows you to encase your CDs in a protective plastic sleeve that doesn't have to be removed when you play the disc.

CD Armor consists of a pair of optically clear thin plastic sheets that are molded to the same dimensions as a compact disc. One sheet is placed on the top and another on the bottom of the disc, encasing it. The sheets have interlocking grooves on the edges, and a special device completes the final step of interlocking the two sheets together to form the protective sleeve.

The CD can be played with the sleeve on, and the sleeve can be removed and replaced when scratched or worn. The company sent us a sample music CD with the CD Armor attached, and it played just fine.—DT

Contact: Digital Armor, 800-942-5224, <http://www.digitalarmor.com>

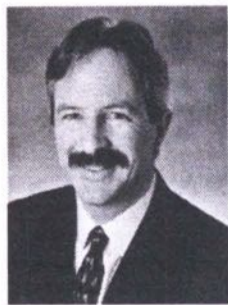
Laser pointer warning issued • The U.S. Food and Drug Administration has issued a warning following reports about eye injuries from laser pointing devices. These devices are often seen in corporate boardrooms or classrooms, and are used to highlight a part of the presentation with a laser light beam.

As the prices for these devices has fallen, they have become more common and some kids have been using them as toy laser weapons. However, the lasers can cause eye damage. The FDA rates them as Class IIIa lasers.

According to a bulletin from the BC Association of Optometrists, Class IIIa lasers are considered medium power and moderate risk devices. "If aimed at the eye for as little as 10 seconds, laser pointers can cause retinal damage as extensive as staring directly into the sun" states the association.—DT

Compaq Canada has new president •

Taking the helm of Compaq Canada is Peter Ciceri, who was appointed president and managing director in February. Ciceri was previously vice-president and managing director of Tandem Asia Pacific Ltd. and has also worked in the Asia Pacific region for UB Networks and Hewlett-Packard.



In June '97, Compaq announced its intention to acquire Tandem Computers Inc. in a deal valued at approximately US\$3 billion. In January the company announced its intention to acquire Digital Equipment Corp. for US\$9.6 billion. If completed the deal would make Compaq the second largest computing company in the world.—DT

Adobe launches Chinese Illustrator 7.0C •

HONG KONG (NB)—Adobe Systems has launched the Chinese version of Illustrator 7.0C. The updated software includes improved image handling, and more features for Web publishing. Illustrator 7.0C is available for Windows 95, Windows NT, Macintosh, and Power Macintosh systems, for cross-platform compatibility, and a virtually identical user interface for both Windows and Macintosh versions.

"The launch of Illustrator is aimed at meeting the market's demand for powerful Chinese graphical software," said Kevin Henshaw, Adobe's regional sales manager. The market potential is so great, in fact that Adobe will be opening an office in Beijing, according to Graham Freeman, vice-president and general manager, Asia Pacific and Latin America.

A general manager for the region will be appointed by April, and will oversee Hong Kong, Taiwan, and China, while the Hong Kong staff will also gain two new employees.

"Business out of the Hong Kong office has grown 100 percent since January, 1996, which shows how well the business is going," said Freeman. "Still, we've got to run harder to get to where we should have been if not for the economic slowdown in the region."

The software is selling for approximately \$700, and the upgrade for \$260.

Contact: Adobe, <http://www.adobe.com>

ACT! goes corporate with Archer Enterprise for ACT! •

Archer Enterprise Systems has announced an alliance with Symantec Corp., aimed at allowing the estimated 1.5 million ACT! 3.0 users to connect to high-powered database systems, and make this contact management software a powerful "front end" for sales automation solutions. ACT! is widely used in large and small businesses, but has previously been unable to easily communicate information with a large scale server, allowing central management of accounts, sales opportunities, contacts, and sales force productivity.

With Archer Enterprise for ACT!, Archer representatives say, "we will offer consultation, integration, training and support services for our new solution. ...Through this partnership we will be able to provide products that meet the demands of the end users

that are scalable, cost effective and user friendly."

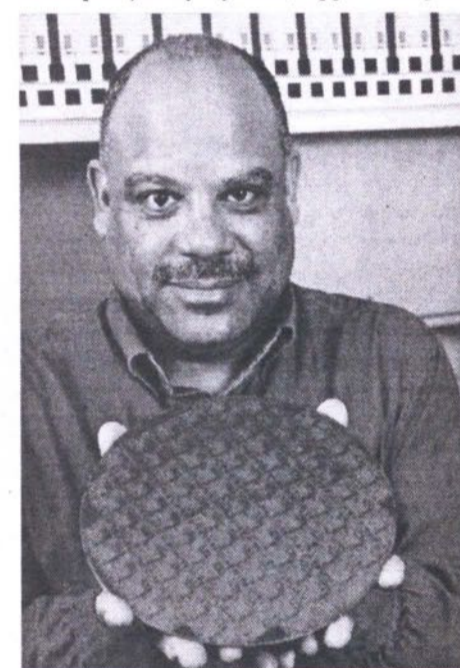
According to Chris Calisi, vice-president of Symantec's Remote Productivity Solutions Group, "We view this alliance with Archer as a long-term relationship based on the seamless integration of Archer Enterprise for ACT! This partnership will lead to the development of other sales force automation products based on ACT! and Archer Enterprise architecture to improve sales force productivity."

According to Archer representatives, only about 12 percent of companies that would benefit from an integrated sales force automation system had such a system in 1997. There are over 200, often customized, incompatible sales force systems in use, with none of them having more than a few percent of market share. The huge ACT! user base offers a prime opportunity for Symantec and ACT! to achieve rapid growth in the office automation market.—JE

IBM demos 1 GHz CMOS microprocessor •

AUSTIN, Tex. (NB)—A 15-member team of engineers at IBM's Austin Research Lab has demonstrated an experimental CMOS (complementary metal oxide semiconductor) microprocessor that can operate at a speed of more than one billion cycles per second. The chip contains one million transistors and uses IBM's quarter-micron circuit technology to make gigahertz operation possible.

The chip is based on PowerPC architecture developed jointly by IBM, Apple Computer



and Motorola at the Austin center, reports said. Already clocked at speeds up to 1,100 MHz, or 1.1 GHz, the fully functional processor will eventually be ported to the even faster CMOS 7S "copper chip" design, announced by IBM last year. In that design, copper circuits replace aluminum, allowing more efficiency, less heat, higher operating speeds and lower voltage.

By comparison, Intel recently announced a 333 MHz Pentium II processor, while 0.35-micron Alpha RISC (reduced instruction set computer) processors typically run at speeds between 266 MHz and 500 MHz—half the speed of the new IBM CMOS-based processors.

Getting to full production on a 1 GHz processor will be a horse race. An IBM spokesperson said the new CMOS chip will ship for commercial use in two to three years.

Newsbytes notes Digital and Samsung are both working on 1 GHz Alpha chips and Digital says it will ship one around the turn of the century.

Samsung has demonstrated 0.18-micron chip technology that it is adapting to the Alpha, which it licensed from Digital and makes in Korea. YJ Kim, Samsung's North American Alpha process manager, told Newsbytes Samsung has sampled the Alpha in quarter-micron designs. He would not disclose the clock speed but did repeat a promise that Samsung will ship a 1 GHz processor before anyone else.

The IBM spokesperson remarked, "Lots of people are working on it, but that's not the same as doing it. We've done it."

The new IBM design did not need copper circuits to achieve a 1 GHz benchmark, but development team leader Sang Dhong said it did take circuit and architecture innovations. These include "the merging of some functions and performing others in parallel," he said. Other chip-architecture innovations include a multifunctional unit combining addition and rotation operations into a single circuit, and a new cache design.

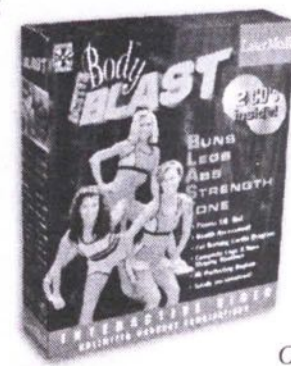
Also, a dynamic circuit approach cuts back the number of stages through which signals must propagate, said the firm. New clocking methods reduce the chip's cycle time and make the timing signal, or clock, more precise.

Mark Dean, IBM fellow and director of the Austin Research Lab, said IBM will now push the design to even higher performance levels.

PC couch potatoes unite! You have nothing to lose but your spare tire! •

A computer-oriented lifestyle may broaden one's technological fitness, but it also tends to broaden one's waistline, due to the long hours spent in a chair and consumption of Chee-tohs that characterize many high-tech lifestyles. Toronto-based LaserMedia has released two innovative new software products aimed at using technology to put computerists in touch with their inner fit person.

Active Trainer is a "smart" personal fitness training program for Windows and Mac. It allows any number of users to set up a personal fitness program. Two friendly, fit online video tutors, Liz and Shane, guide users through the program's "cybergym," consisting of an Aerobics Studio, Weight Room, Stretching Area and Cafeteria. The program shows how to test your own fitness, measuring fat and muscles.



Once a fitness profile has been entered, it provides a baseline to measure progress. Active trainer contains a diet module and a progress enforcer, backed up by pep talks from Liz and Shane.

Continued on page 14

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EDITOR'S CHOICE, COMPUTER PAPER JAN 1998



ULTINET EXECUTIVE PARTNER XP7200(tm) 14.1/15.1" NOTEBOOKS W/PENTIUM @ MMX (20X CDROM)

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XP7200-233MMX, 14.1" Active	\$3793	\$3926	\$4197
XP8500-233MMX, 15.1" Active	+\$428	+\$428	+\$428

NOTEBOOK FEATURES

	14.1/15.1"	12.1"
Intel CPU Options	P-166MMX-P233MMX	
Int. CPU L2 Cache	New models now with 512k cache	
Base / Max RAM	32 mb / 128 mb	32 mb / 128mb
Local Bus Video RAM	PCI 4 mb	PCI 2 mb
Max.HDD, 2nd Hdd	5.1 GB, Y	5.1 GB, N
Floppy Drive	1.44 mb	1.44 mb
Display	14.1/15.1", 1024x768	12.1", 800x600
External Monitor	simultaneous, max 1024x768	
Ports	1 par, 1 ser, 1 ext video port, TV & Jystck	
PCMCIA slots	2x 32 cardbus	3x 16 slots
SVGA, PCMCIA Drivers	Included	Included
Pointing Device	Trackpad	Trackpad
Battery Type, 2nd opt	NiMH/LiON	NiMH, LiON opt
Sound	16-bit, speaker, mic, 1mb wavetable	
Windows 95 CD ver	Included	Included
CD-ROM	New fast 20x	New fast 20x
Carry Case, AC Adaptor	Included	Included
Dimensions (inches)	10.5 x 13.1 x 2.3	9 x 12 x 2
Battery Life w/power mgmt	Approx 1.5-3hrs	Approx 1.5-3hrs



Ultinet P-233MMX Package
Awarded Editor's Choice
The Computer Paper, December 1997

Editor's Choice Notebook

COMPARE: WHY PAY MORE & GET LESS

Processor	Intel Pentium MMX Processor
Motherboard	Fastest MMX notebook chipset with 512k pipeline burst cache
RAM	fast 32 mb EDO ram, expandable to 128mb
Video	Trident 9385 cyber chipset, 2mb, zoom capable
Display	12.1" Active Matrix, non glare, no radiation lcd
Sound card	ESS 1788 with built in 1mb wavetable ROM
Voice/Fax/Modem	Optional 33.6 or 56k
Built in 1.44mb floppy	simultaneous with built in CDROM
Hard drive	2.1gb enh ide, removable, upto 10gb*
CD-ROM drive	Built in 20X TEAC cdrom
Opr system	Win 95, full version on CD-ROM & manuals
Extras	Built in IR Port, speakers & microphone
	57 CD titles incl. Comptons ency or 7 title Mini Office suite
	Battery Nimh 1.5hr battery incl, Li(opt), 2nd battery option
Warranty	1yr Parts & 3 yrs Labour
	Optional 2nd & 3yr warranty available
Service	The fastest service in Canada, over the counter or by Puroletter across the country.

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XP2100-P200MMX Active	\$2456,	or \$91/monthly
XP2100-P233MMX Active	\$2560,	or 95/monthly
XP6200-P200MMX Active	\$2830,	or \$105/monthly
XP6200-P233MMX Active, Editor's Choice	\$2940,	or \$109/monthly
Upgr 6200 12.1" Active to 13.3"/14.1"/15.1" active	add \$757/\$852/\$1280	

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XP2100*-200MMX, Active	\$2456	\$2598	N/A
XP2100*-233MMX, Active	\$2560	\$2693	N/A
XP6200-200MMX, Active	\$2830	\$2963	N/A
XP6200-233MMX, Active	\$2940	\$3073	N/A

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Each mb of 60 ns fast EDO ram (16 more mb only \$180!!WOW!!)	\$11.25
Upgr XP6200 12.1" DSTN to 12.1 active matrix 800x600 display	\$462
Upgr XP6200 12.1" active to XP7200 14.1" active 1024x768 display	\$852
Downgrade from XP7200 14.1" active to XP7200 13.3" active	\$100
Upgr 14.1" XP7200 active to 15.1" XP8500 active matrix	\$428
Extra Removable HDD case/external hard drive	\$60/Call
PCMCIA Ethernet adaptor 10 BT	\$95
PCMCIA 33.6/56kX2 fax/modem	\$105/197
External Parallel 800 mb Tape Back-up	\$285
1.4gb/2.1gb/3.1gb hard drive for notebooks	\$260/\$325/\$495

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P-133 DUALSCAN, 6.2lbs, 33.6fax/modem, 16mb, 1.3gb, 4xcd	\$1895
P-133 ACTIVE, 6.2lbs, 33.6fax/modem, 16mb, 1.3gb, 4xcd	\$2195
P-166mmx, 32mb EDO, 1.6gb hdd, 2mb video, 8Xcdrom, 33.6fx/mdm	\$735
P-200mmx, 32mb EDO, 1.6gb hdd, 2mb video, 8X cdrom, 33.6fx/mdm	\$765
P-233mmx, 32mb EDO, 1.6gb hdd, 2mb video, 8X cdrom, 33.6fx/mdm	\$875

ULTINET TOWER SPECIFICATIONS & OPTIONS*

Intel MMX Processor	P-166 to 266 MHz Pentium @ processor
	Pii-233 to Pii-333 MHz Pentium II @ processor
Motherboard HX/TX or LX	4 PCI, 4 ISA slots, or 4 PCI, 2ISA, 1AGP
BIOS/ Chipset	PnP, Intel-Triton for MMX & PII
Cache	Fast 512k pipeline cache
High Performance	Yes, system optimized for max performance
Hard Drive & controller transfer mode	<11 ms, EIDE M4 or UDMA
HDD controller	PCI enhanced dual channel supports up to 4 devices
Floppy Drive	1.44 mb (incl) or LS-120mb (optional)
Low radiation/energy monitor	Monitor as required*
Video Card	S2 Virge 2mb standard upgradeable to ATI and Matrox, etc
Sound Card, Speakers	Yamaha Wave32, SB16/SB64, speakers etc
Enhanced keyboard & mouse	Windows 95 104 enhanced & 400 dpi
Case, power supply	Enhanced deluxe tower, 230 Watt
Serial/ Parallel Ports	2x16550 enhanced serial, enhanced parallel
CDROM	24X etc
CDs Included	57 CD title pak (educational & entertainment including Comptons 97Encyclopedia) or 7 CD title pak Mini Office suite
Warranty	2 years parts & 5 yrs labour system warranty on all hardware, with fast turnaround

*2100/Entry Level/Clearance Pkg warranty & specifications may vary.

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P-200MMX Pentium @ processor, TX	\$1279
P-233MMX Pentium @ processor, TX	\$1385
Pii-233MMX Pentium @ processor, LX	\$1646
Pii-266MMX Pentium @ processor, LX	\$1777
Pii-300MMX Pentium @ processor, LX	\$2019
Pii-333MMX Pentium @ processor, LX	\$2340
Upgr 15" to 17" .28dp monitor to the above	\$249
Upgr each additional 32mb of sdrum ram	\$74
Upgr 4mb S3 Virge PCI to Blitz 3DFX 4mb AGP/ 2.5gb to 4.3gb hd Free/54	

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P-200MMX Pentium @ processor, TX	\$1665
P-233MMX Pentium @ processor, TX	\$1771
Pii-233MMX Pentium @ processor, LX	\$2027
Pii-266MMX Pentium @ processor, LX	\$2159
Pii-300MMX Pentium @ processor, LX	\$2402
Pii-333MMX Pentium @ processor, LX	\$2723
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Pii-233MMX Pentium @ processor, LX	\$2525
Pii-266MMX Pentium @ processor, LX	\$2657
Pii-300MMX Pentium @ processor, LX	\$2898
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P-200MMX Pentium @ processor, TX	\$2310
P-233MMX Pentium @ processor, TX	\$2415
Pii-233MMX Pentium @ processor, LX	\$2655
Pii-266MMX Pentium @ processor, LX	\$2786
Pii-300MMX Pentium @ processor, LX	\$3027
Pii-333MMX Pentium @ processor, LX	\$3350
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15" to Sony 15" 100ES .25dp NI UVGA monitor	\$278
15" to Intelliview 17" .28dp NI OSD UVGA, 1280x1024 82khz mtr	\$249
15" to Optique 17" V773 .26dp (1280x1024) mtr	\$438
15" to Mag DX700T 17" .25dp NI UVGA monitor, Trinitron CRT	\$598
15" to Viewsonic V775 .25dp NI UVGA monitor, Trinitron CRT	\$554
15" to Optique V95 19" (1600X1280), .26dp TCO/OSD	\$950
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2gb Travan internal tape backup	\$179
IOMEGA 100mb zip drive (OEM)/LS-120 floppy drive	\$139/\$165
Motorola MPU68000 disk caching controller with 4mb/16mb	\$95/\$135
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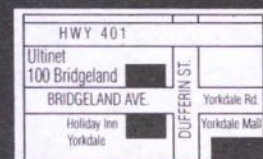
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WHAT'S NEW

Continued from page 12

The second LaserMedia title is Active Body Blast, a two-disc pack that homes in on the lower body: buns, legs, abs, and general lower body strength and tone. Like Active Trainer, Body Blast offers customized training plans and workouts.

The only thing lacking from these programs is some form of hypnosis to get sedentary folks to follow through with the range of healthy activities prescribed. For that, some true interactivity by the user is required. Both LaserMedia titles are \$39.—JE

Contact: LaserMedia, <http://www.lasermedia.com>,
Active Trainer, Tel: 800-639-0628 or 416-977-2001,
<http://www.activetrainer.com>

Machine translation on the Net: Alis, Digital, and a multilingual Web • At the recent Internet World in Toronto, one of the most interesting events happened off the trade show floor, when a Japanese trading conglomerate and a tiny Montreal-based Canadian technology company announced their partnership. Mitsui Canada and Alis Technologies Inc. used the show as a backdrop to announce a major alliance to provide automated translation of Internet content from English to Japanese. Mitsui—America On Line's Japanese partner—is confident Alis's translation expertise will open up the richness of the Internet for a much larger portion of Japan's population.

Machine translation is still a fairly rough and ready business. According to Susumu Miyamoto, president and chief executive officer of Mitsui Canada, regarding the use of Alis tools and services, "I see a great opportunity in the Japanese and Asian corporate markets, where most people do not usually use English."

Alis's approach is oriented towards translating English content into non-English languages, but there is a corresponding demand for translation in the other direction.—JE

Contact: Alis, Tel: 514-747-2561, <http://www.alis.com>

Canadian pilot project eases Internet access for blind • TORONTO (NB)—A pilot project involving three libraries is testing technology that will make it easier for people who are blind or have difficulty reading print to use the Internet and other online resources. Systems at the Canadian National Institute for the Blind (CNIB) Library for the Blind in Toronto, and at public libraries in Brantford, Ont., and Regina, Sask., are trying out the specially equipped computers.

The trial began in October and will run until some time this spring, said Margaret Andrews, advocacy coordinator for the CNIB Library for the Blind. It is supported by the federal government's Community Access Program (CAP) as well as the CNIB and the Regina and Brantford public libraries.

The computers are equipped with adaptive technologies including: the Canadian-designed Window Bridge speech-access soft-

ware for Windows; a speech-output, text-only World Wide Web browser called PwWebSpeak; and the ZoomTextXtra screen enlargement program. They also provide access to Visnet:Canada, the CNIB's information service, which includes more than 50,000 books and other materials in braille, audio, and other alternative formats.

The Community Access Program's main

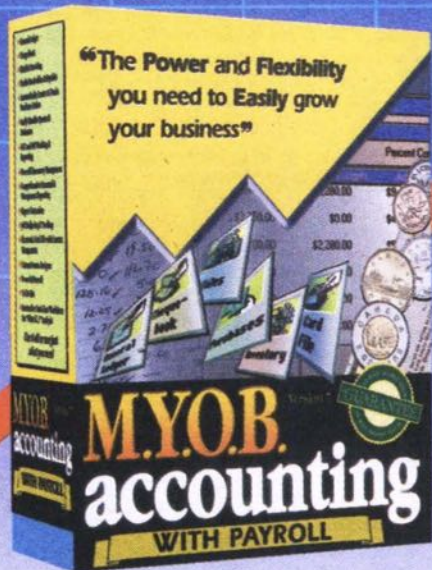
focus has been on promoting Internet access in smaller communities, but Andrews told Newsbytes that this project represents CAP's recognition that there are many people in larger centres who have trouble using online services for various reasons, such as physical disabilities. The pilot project is meant to be a model for other communities that want to provide such access.

Contact: CAP, <http://www.cap.unb.ca>
Regina Public Library, <http://www.rpl.regina.sk.ca>
Brantford Public Library CAP Centre,
<http://www.worldchat.com/library>
CNIB Library, <http://www.cnib.ca>

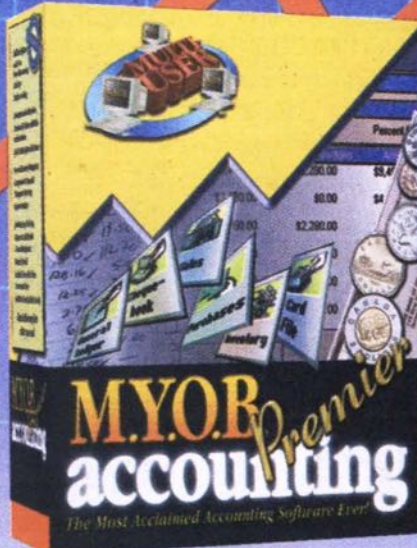
What's New is compiled by David Tanaka, Jeff Evans, and Megan Johnston.

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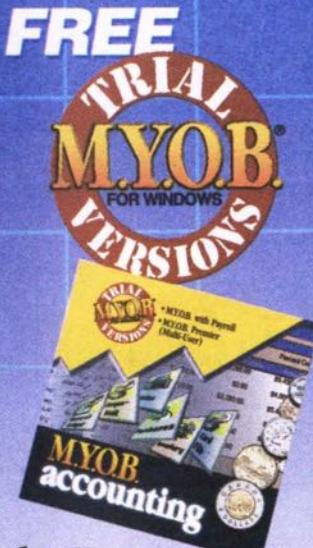
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2MB PCI Video Card
Supra 33.6 Voice/Fax Modem
Sound Blaster 16 PnP
GNT 650 3D Speakers
1.44MB Floppy Drive
19" Tower Case
Mitsumi Mouse
Mitsumi Enhanced Keyboard
14" SVGA .28dp Monitor
Microsoft Windows 95 OSR2

\$1375

Or \$47/month*

FAMILY PENTIUM 200 MMX

Intel Pentium 200 MMX
Intel 430TX Motherboard
32MB SDRAM, 512K PBC
Quantum 3.2 GB ST Hard Drive
Toshiba 24X CD-ROM
Diamond Stealth II 4MB SGRAM
Supra 56K Voice/Fax Modem
Sound Blaster AWE64 PnP
GNT 650 3D Speakers
1.44MB Floppy Drive
19" Tower Case
Microsoft Intellimouse
Mitsumi Enhanced Keyboard
15" SVGA .28dp Monitor
Microsoft Windows 95 OSR2
MS Encarta '98 Home Bundle

\$1775

Or \$60/month*

GAMER PENTIUM 233 MMX

Intel Pentium 233 MMX
Intel 430TX Motherboard
32 MB SDRAM, 512K PBC
Quantum 4.3 GB SE Hard Drive
Toshiba 32X CD-ROM
Diamond Viper V330 4MB SGRAM
Supra 56K Voice/Fax Modem
Sound Blaster AWE64 PnP
GNT 5000 Speakers w/Subwoofer
1.44MB Floppy Drive
19" Tower Case
Microsoft Intellimouse
Mitsumi Enhanced Keyboard
15" MAG DX500T .25dp Mon.
Microsoft Windows 95 OSR2
MS Encarta '98 Home Bundle

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C-NOTE 166 MMX

Pentium 166 MMX
32MB EDO RAM
2.1 GB Hard Drive
33.6 PCMCIA Fax Modem
Single NiMH Battery
12.1" Active Screen

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ALL MODELS INCLUDE:

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- Windows '95 - OSR2
- Carrying Case

C-NOTE 233 MMX

Pentium 233 MMX
32MB EDO RAM
3.0 GB Hard Drive
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Dual NiMH Batteries
14.1" Active Screen

\$4295

Or \$145/month*

C-NOTE 266 MMX

Pentium 266 MMX
32MB EDO RAM
Tillamook Chip
4.0 GB Hard Drive
56K PCMCIA Fax Modem
Single Li-Ion Battery
15.1" Active Screen

\$6295

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32 MB SDRAM, 512K PBC
Quantum 4.3 GB SE Hard Drive
Toshiba 24X CD-ROM
Diamond Stealth II 4MB SGRAM
Supra 56K Voice/Fax Modem
Sound Blaster 16 PnP
GNT 650 3D Speakers
1.44MB Floppy Drive
19" ATX Tower Case
Microsoft Intellimouse
Mitsumi Enhanced Keyboard
15" MAG DX500T .25dp Monitor
Microsoft Windows 95 OSR2
MS Office Professional '97

\$2495

Or \$84/month*

OFFICE PENTIUM II 266

Intel Pentium II 266
ABIT LX6 Motherboard
32 MB SDRAM, 512K PBC
Quantum 4.3 GB SE Hard Drive
Toshiba 24X CD-ROM
Diamond Stealth II 4MB SGRAM
Supra 56K Voice/Fax Modem
Sound Blaster AWE64 PnP
GNT 650 3D Speakers
1.44MB Floppy Drive
19" ATX Tower Case
Microsoft Intellimouse
Mitsumi Enhanced Keyboard
17" MAG DX700T .25dp Monitor
Microsoft Windows 95 OSR2
MS Office Professional '97

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Or \$105/month*

POWER PENTIUM II 300

Intel Pentium II 300
ABIT LX6 Motherboard
64 MB SDRAM, 512K PBC
Quantum 8.4 GB SE Hard Drive
Toshiba 32X CD-ROM
Diamond Viper V330 4MB SGRAM
Supra 56K Voice/Fax Modem
Sound Blaster AWE64 PnP
GNT 5000 Speakers w/Subwoofer
1.44MB Floppy Drive
19" ATX Tower Case
Microsoft Intellimouse
Mitsumi Enhanced Keyboard
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on all systems
(1 year on laptops)**



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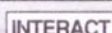
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TritonTX 3D Station

Intel Pentium Processor with Fan (support up to 233MHz MMX)
Triton 430TX PCI/ISA Main Board w/512KB Pipeline Cache
32MB 168 Pin High Performance SDRAM exp. to 128MB
1.44MB Floppy Drive
3.2GB UltraDMA-33 IDE Hard Drive
2x16550 Serial, 1xBi-Directional Parallel
PCI ATI 3D Xpression + PC2TV 64-bit Accelerator w/2MB SDRAM
Creative Labs Sound Blaster AWE64 Card, 60W Speakers (P.M.P.O.)
24x Speed EIDE CD-ROM
15" Non-Int. Low Rad. SVGA Monitor PnP
15" Tower Case with CSA Power Supply
104-keys Windows 95 Keyboard, 3 Button Mouse
2 Year Parts & Service Warranty

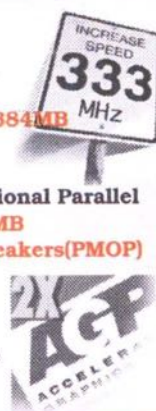


ULTRA DMA 33 33MB/s Transfer
Sound Blaster AWE64

166MMX	\$1,215
200MMX	\$1,245
233MMX	\$1,345

Pentium II-Professional

Intel Pentium II Processor with Fan
ASUS/ABIT 440LX AGP/PCI/ISA ATX Main Board
Internal L2 Cache
32MB 168 Pin High Performance SDRAM exp. to 384MB
1.44MB Floppy Drive
4.3GB Ultra DMA33 IDE Hard Drive
Ultra DMA33 Cont. w/2x16550 Serial, 1xBi-Directional Parallel
AGP ATI Xpert@Work 3D Accelerator Card with 4MB
Creative Labs Sound Blaster AWE64 Card, 60W Speakers (PMOP)
32x Speed EIDE CD-ROM
15" Non-Int Low Rad. SVGA Monitor PnP
ATX Mid-Tower Case with CSA Power Supply
104-keys Windows 95 Keyboard, Genius NetMouse
2 Year Parts & Service Warranty



233MHz w/512KB L2	\$ 1,805
266MHz w/512KB L2	\$ 1,955
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333MHz w/512KB L2	\$ 2,480

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4.3GB	\$277

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DVD ENCORE
Dxr2 Kit
\$275 CUT



Triton II Power Station

Features:
Intel Pentium Processor with Fan (support up to 233MHz MMX)
Triton 430TX PCI/ISA Main Board w/512KB Pipeline Cache
16MB-60ns EDO Performance Enhanced DRAM exp. to 128MB
1.44MB Floppy Drive
2.1GB UltraDMA-33 IDE Hard Drive
2x Ultra DMA Bus Master IDE Controller
PCI Cirrus Logic 5446 Windows Accelerator w/1MB DRAM
2x16550 UART Serial, 1 Bi-Directional Parallel
14" Non-Int SVGA Monitor .28mm dp
15" Mid-Tower Case with 200W CSA Power Supply
104-keys Win95 Keyboard
3 Button MS Compatible Mouse
2 Year Parts & Service Warranty

64 Bit
MPEG
PLAYBACK

Triton II Power Station Plus

Features:
Intel Pentium Processor with Fan (support up to 233MHz MMX)
Triton 430TX PCI/ISA Main Board w/512KB Pipeline Cache
16MB-60ns EDO Performance Enhanced DRAM exp. to 128MB
1.44MB Floppy Drive
2.1GB UltraDMA-33 IDE Hard Drive
2x Ultra DMA Bus Master IDE Controller
PCI Trident 9685 3D Accelerator w/1MB RAM (exp. to 2MB)
Clear TV: Integrated TV Display Support
2x16550 UART Serial, 1 Bi-Directional Parallel
14" Non-Int SVGA Monitor .28mm dp
15" Tower Case with 200W CSA Power Supply
104-keys Win95 Keyboard
3 Button MS Compatible Mouse
Creative Labs Sound Blaster 16 Card
24x Speed EIDE CD-ROM, 60W Speakers (P.M.P.O.)
2 Year Parts & Service Warranty

SEGA
Virtua Fighter
Daytona USA
Virtua Squad
Demos

Superior Station

Features:
AMD-K6 MMX Processor w/64KB L1 cache
VIA Apollo VP3 AGP/PCI/ISA Board w/512KB Pipeline Cache
32MB 168 Pin High Performance SDRAM exp. to 512MB
1.44MB Floppy Drive
3.2GB Ultra DMA-33 IDE Hard Drive
AGP Trident 9850 3D Image/TV Out 3D Card w/4MB SGRAM
Ultra DMA IDE Controller
2 x 16550 Serial, 1 Parallel & 1 Game Port
15" Non-Int SVGA Monitor .28mm dp PnP
Mini-Tower Case with CSA Power Supply
104-keys Win95 Keyboard, 3 Button Mouse
PCI S3 SonicVibes (WaveTable Synthesis) SRS Sound Card
24x Speed EIDE CD-ROM, 60W Speaker (PMPO)
2 Year Parts & Service Warranty

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PENTIUM

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166MMX \$810	233MMX \$ 940

PENTIUM

166MHz \$ 955	200MMX \$1,000
166MMX \$ 970	233MMX \$1,100

AMD-K6 MMX

K6-166MMX	\$1,170
K6-200MMX	\$1,200
K6-233MMX	\$1,235

Video Graphics Adapters

ATI 3D Xpression + PCI 2MB/4MB	\$83/113
ATI 3D Xpression + PC2TV 2MB/4MB	\$104/130
ATI 3D Pro Turbo PC2TV 4MB/8MB SGRAM	\$165/239
ATI All-in-Wonder PCI Card 2MB/4MB	\$220/233
ATI All-in-Wonder Pro PCI Card 4MB/8MB	\$305/380
ATI All-in-Wonder Pro AGP Card 4MB/8MB	\$336/405
ATI Xpert@Work PCI Card 4MB/8MB	\$186/247
ATI Xpert@Play PCI Card 4MB/8MB SGRAM	\$220/282
ATI Xpert@Work AGP Card 4MB/8MB	\$195/265
ATI Xpert@Play AGP Card 4MB/8MB	\$238/299
ATI TV Tuner Card	\$115.00
Creative Labs 3D Blaster Voodoo2 PCI 8MB/12MB	\$306/400
Matrox Millennium II PCI 4MB/8MB WRAM	\$235/350
Matrox Mystique 220 3D Card 2MB/4MB SGRAM	\$120/145
Matrox m3D 3D Card w/4MB	\$130.00
Cirrus Logic 5446 PCI w/1MB exp. to 2MB (MPEG)	\$29.00
S3 3D Virge DX PCI w/4MB EDORAM	\$66.00
Trident 9685 3D Accelerator 1MB (w/3D Games)	\$45.00

Monitors

ADI E40/4P 15" N/L/R (1280x1024, 28mmDP)	\$300/350
ADI 5P/5P+ 17" N/L/R (1280x1024, 28/26mmDP)	\$610/640
Impression 17" Diamondtron N/L (1600x1280, 25mmDP)	\$790.00
Mag DJ530 15" N/L (1280x1024, 28mmDP)	\$385.00
Mag DJ700 17" N/L (1280x1024, 26mmDP)	\$760.00
Mag DX700T 17" N/L (1280x1024, 25mm Trintron)	\$820.00
NEC A500/A700 .28mmDP DotTrio	\$415/695
NEC E500/E700 .25mmDP Cromaclear	\$485/960
Panasonic S15/S70 15"/17" (1280x1024, 27mmDP)	\$355/640
Panasonic PF70 17" FS (1280x1024, 24mmDP)	\$1065.00
Panasonic S21 21" (1600x1200, 25mmDP)	\$1435.00

Proview 14" N/L/R (1024x768, 28mmDP)	\$193.00
Proview 15" N/L/R (1280x1024, 28mmDP)	\$255.00
Proview 17" N/L/R (1280x1024, 28mmDP)	\$480.00
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Sony 200ES 17" N/L/R (1280x1024, 25mmDP)	\$880.00
Sony 200GS 17" N/L/R (1280x1024, 25mmDP)	\$880.00
Sony 200PS 17" N/L/R (1600x1200, 25mmDP)	\$1125.00

HD/FD Controllers

ISA IDE HD/FD Controller with I/O UART 16550	\$22.00
Adaptec 1505 SCSI CD-ROM Controller	\$75.00
Adaptec 2910 PCI SCSI Controller (No FDD)	\$85.00
Adaptec 2920 PCI SCSI Controller	\$199.00
Adaptec 2940U PCI Ultra SCSI Controller	\$220.00
Adaptec 2940UW PCI Wide SCSI Controller	\$280.00
Adaptec 2940U2W PCI Ultra 2 SCSI Controller	\$590.00

Keyboards & Cases

Fujitsu 4725 Enhanced 104 Keys	\$57.00
Fujitsu 8725 Enhanced 104 Keys	\$23.00
AirBoard Wireless Keyboard with Mouse Control	\$85.00
BT/Mitsumi Windows 95 Keyboard	\$15.00
Microsoft Natural Keyboard OEM	\$75.00
25" Server Tower with 300W CSA Power Supply	\$230.00
Full Size Tower with 230W CSA Power Supply	\$95.00
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Mini Size Tower with 200W CSA Power Supply	\$38.00
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Mitsubishi LS-120 120MB Floppy Drive w/disk	\$155.00

Ultra DMA 2.1GB/2.6GB/3.2GB HDD	\$200/226/234
Ultra DMA 4.3GB/5.2GB/6.4GB HDD	\$277/345/376
Ultra DMA 8.4GB/12GB HDD	\$515/560
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MultiMedia

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Creative Labs PC-DVD Encore DVD Kit (3 DVD titles)	\$385.00
Creative Labs Sound Blaster 16 PnP	\$49.00
Creative Labs Sound Blaster AWE64/AWE64 Gold	\$97/255
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Diamond SonicImpact 64 PCI Sound Card	\$94.00
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Motorola VoiceSurf 56K Int/Ext Modem	\$125/155
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US Robotics 33.6Vi Int Modem (Full Duplex)	\$126.00
US Robotics 33.6Vi Ext Modem (Full Duplex)	\$198.00
US Robotics 56K Int/Ext Fax Modem	\$150/260
US Robotics 56K Int/Ext Fax Modem Voice	\$150/285
US Robotics Big Picture Video Kit	\$385.00
Genius NetMouse with Magic-Button	\$13.00
Logitech Mouseman OEM	\$25.00
Logitech FirstMouse +	\$29.00
Microsoft Mouse v.2 OEM	\$35.00
Microsoft Comp. Mouse	\$7.50

Printers

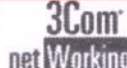
Canon BJ-250 Color Inkjet	\$197.00
Canon BJC-4300 Color Inkjet	\$259.00
Brother HL730/760DX Laser Printer 600dpi	\$435/520
Brother HL1660 Laser Printer 1200dpi Class	\$1289.00
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Epson Stylus Photo Color Inkjet 720dpi	\$535.00
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HP 890Cxi Deskjet Color Printer	\$557.00
HP 1000Cxi Deskjet Color Printer	\$430.00
HP 4000 Laserjet, 1200 dpi 17PPM	\$1599.00
HP 6L Laserjet, 600 dpi 6 PPM	\$549.00
HP 6P/6MP Laserjet, 600 dpi 8 PPM	\$1030/1280
Raven PR-2405 24-pin, 192 cps	\$230.00



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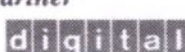


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Ultra DMA33 Cont. w/2x16550 Serial, 1xBi-Directional Parallel
AGP Trident 9850 3DImage/TV Out 3D Card with 4MB SGRAM
Creative Labs Sound Blaster 16 Card, 60W Speakers (PMOP)
24x Speed EIDE CD-ROM
15" Non-Int Low Rad. SVGA Monitor PnP
ATX Mid-Tower Case with CSA Power Supply
104-keys Windows 95 Keyboard, PS/2 Mouse
2 Year Parts & Service Warranty

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32MB 168-Pin SDRAM	\$80.00
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NetWare v3.2 100/250 User	\$7060/12620
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IntraNetWare v4.11 Manuals	\$505

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Windows NT Workstation 4.0 upgrade	\$180
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BackOffice Small Business Server v4.0 w/25 Clients	\$3280
Microsoft SMS version 1.2 w/10 Clients Lic.	\$1465
Microsoft SMS version 1.2 w/25 Clients Lic.	\$2350
Microsoft SNA Server v3.0 w/5 Clients Lic.	\$1725

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\$1465.00



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HP 55i NX Network Ready, 600dpi, 24ppm	\$3875
HP 55i MX Laserjet, 600dpi, 24ppm	\$4415
HP 4V/4MV Laserjet, 600dpi, 16ppm	\$2620/3795
Lexmark Optra S 1250, 12ppm, 4MB	\$1450
Lexmark Optra S 1250N, 12ppm, 4MB, Ethernet	\$1870
Lexmark Optra S 1620, 16ppm, 4MB	\$1465
Lexmark Optra S 1620N, 16ppm, 4MB, Ethernet	\$1865
Lexmark Optra S 1650, 16ppm, 4MB	\$1615
Lexmark Optra S 1650N, 16ppm, 4MB, Ethernet	\$2080
Lexmark Optra S 2420, 24ppm, 4MB	\$2365
Lexmark Optra S 2420N, 24ppm, 8MB, Ethernet	\$2850
Lexmark Optra SC 1275, 3ppm, 16MB	\$5670
Lexmark Optra SC 1275N, 3ppm, 32MB	\$6280

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Exabyte 8900SL 20-40GB Int/Ext 8mm Drive	\$4520/4900
Exabyte Eliant 820 14GB Int/Ext Tape Drive	\$2300/2680
Iomega Ditto Max 7GB Int/Ext Tape Drive	\$ 2 8 0
Iomega Ditto Max Pro 10GB Int/Ext Tape Drive	\$ 4 2 0
Hewlett Packard SureStore 7200 Int/Ext CD-Writer	\$565/700
Hewlett Packard SureStore SCSI/Parallel Kit	\$ 8 8 . 0 0
Seagate 2GB 4mm DAT Int/Ext SCSI Drive	\$750/1025
Seagate 4GB 4mm DAT Int/Ext SCSI Drive	\$825/990
Seagate 8GB 4mm DAT Int/Ext SCSI Drive	\$1070/1235
Seagate 24GB 4mm DAT Int/Ext SCSI Drive	\$1405/1590
Seagate Sidewinder AIT 50GB Int SCSI Drive	\$ 4 1 5 0
Seagate Sidewinder AIT 50GB Ext SCSI Drive	\$ 4 5 6 5
Sony SDT-5000 Int/Ext. 4-8GB DAT	\$1190/1380
Sony SDT-5200 Int/Ext. 4GB DAT	\$965/1245
Sony SDT-7000 Int/Ext. 4-8GB DAT	\$1265/1510
Sony SDT-9000 Int/Ext. 24GB DAT	\$1650/1730

Power Protection

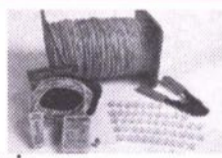
APC BackUPS 280B
\$139.00



American Power 120 Volt

BackUPS 200B/280B/400B	\$125/139/186
BackUPS 450/600	\$236/325
BackUPS Pro 280B/420/650	\$195/320/395
BackUPS Pro 1000/1400	\$545/700
SmartUPS AP400/SU420/SU620	\$435/350/430
SmartUPS SU700/SU1000/SU1400	\$520/690/900
SmartUPS SU2200/SU3000	\$1355/2500
Back UPS Office 250-3 Surge & 3 UPS Outlets	\$ 1 5 0
Matrix 3000VA/5000VA (Modular UPS)	\$3850/5950
Line Conditioner LR600/LR1250	\$170/245
Personal SurgeArrest 7/7 Outlets with Tel	\$ 2 5 / 3 0
Professional SurgeArrest 7/7 Outlets with Tel	\$ 3 8 / 4 8
Network SurgeArrest 7/7 Outlets with Tel	\$ 4 2 / 5 6
Network SurgeArrest 8 Outlets	\$ 4 9

Cables & Jacks



Twisted Pair

Assembly, 10 BaseT Cable 8/25/50 ft	\$8/15/23
Assembly, 10 BaseT Cable 100 ft	\$ 3 8
Cable, 10BaseT 8c UTP, per ft	\$0.30
Cable, 10BaseT 8c UTP, per 1000 ft	\$200
Connector RJ45M	\$0.38

Coaxial

Assembly, RG58/AU Thin Coax 25/50 ft	\$15/22
Assembly, RG58/AU Thin Coax 100 ft	\$ 3 5
Cable, RG58/AU Bulk per ft	\$0.25
Cable, RG58/AU Bulk per 1000 ft	\$180
Connector, BNC "T"	\$2.50
Terminator, BNC, 52 ohm	\$2.50
Tool, BNC Crimping	\$ 6 0
Terminator, BNC, 52 ohm w/ground strap	\$3.00

Ethernet Coax / Combo Adapters

3COM 3C509B Combo BNC/RJ45	\$ 1 5 0
3COM 3C900 PCI Ethernet III Combo	\$ 1 7 0
CNet CN650E+ BNC & 10BaseT Ethernet	\$ 3 5
CNet CN930E PCI Ethernet Combo	\$ 4 5
D-Link DE-220PCT ISA Ethernet Combo	\$ 4 0
D-Link DE-530CT+ PCI Ethernet Combo	\$ 5 5
GVC 2005BT ISA Coaxial/10BaseT Jumpless	\$ 3 5
GVC 2006BT PCI Coaxial/10BaseT Jumpless	\$ 4 0
Intel ISA EtherExpress Pro 10+ Combo	\$ 9 4
Intel ISA EtherExpress Pro 10+/Flash Combo	\$ 1 1 2
Intel PCI EtherExpress Pro 10+ Combo	\$ 1 6 3
SMC PCI EzCard Combo	\$ 5 0
SMC 8416B ISA EtherEZ Coax	\$ 1 3 2
SMC 8416BT ISA EtherEZ Combo	\$ 9 0
SMC 8432BT PCI EtherPower Combo	\$ 1 1 3

Print Servers

HP JetDirect J2550B RJ45	\$ 4 3 5
HP JetDirect J2552B RJ45/BNC/LocalTalk	\$ 5 0 5
HP JetDirect J2555B Token Ring DB-9 & RJ45	\$ 7 2 5
HP JetDirect 150X RJ45	\$ 2 3 5
HP JetDirect EX Plus J2591A Multiprotocol Print Server	\$ 3 3 0
HP JetDirect EX Plus J2593A RJ45/BNC	\$ 5 4 5
HP JetDirect EX Plus J2594A Token Ring DB-9 & RJ45	\$ 7 1 0
HP JetDirect J2590A 10/100VG Print Server	\$ 7 4 5
Intel NetPortExpress Pro Ext. Printer Server PCA2151	\$ 5 2 5
Intel NetPortExpress Pro Int. Printer Server PCA3151	\$ 3 6 8
Intel NetPortExpress Pro/100 Ext. Printer Server	\$ 3 7 0
Intel NetPortExpress Pro/100 Ext. Printer Server 3 Port	\$ 5 4 5

PCMCIA Adapters

3COM 3C589D Etherlink III TPO	\$ 1 8 2
3COM 3C589D Etherlink III Combo	\$ 2 5 5
3COM 3C562D-TX Etherlink III TPO + 33.6Kbps Modem	\$ 3 7 5
D-Link DE-660CT PCMCIA Combo NE2000 Compatible	\$ 1 5 0
D-Link DME-336T Ethernet/Modem	\$ 3 0 0
SMC 8020T EtherEZ PC Card (RJ45)	\$ 1 7 8
SMC 8020BT EtherEZ PC Card Combo	\$ 2 3 5
Xircor PCMCIA 56Kbps Modem	\$ 3 0 5
Xircor PCMCIA RJ45 Ethernet + 33.6Kbps Modem	\$ 3 8 0
Xircor PCMCIA Combo Ethernet + 33.6Kbps Modem	\$ 4 3 0
Xircor PCMCIA Ethernet + 33.6Kbps Modem (Mini-Dock)	\$ 3 6 5
Xircor PCMCIA 10/100 Ethernet + 33.6K Modem	\$ 4 2 8
Xircor PCMCIA 10/100 Ethernet + 56K Modem	\$ 4 3 0
Xircor PCMCIA 10/100 Ethernet Ready	\$ 1 9 5
Xircor CardBus 10/100 Ethernet Card	\$ 2 1 0

10 BaseT Hubs

3COM 3C16440 SuperStack II Entry Hub 12 Port	\$ 3 1 0
3COM 3C16441 SuperStack II Entry Hub 24 Port	\$ 4 7 8
3COM 3C16405 SuperStack II PSH Hub 40 12 Port	\$ 6 8 0
3COM 3C16406 SuperStack II PSH Hub 40 24 Port	\$1200
3COM 3C16670A SuperStack II Hub 10 12 Port	\$ 7 1 0
3COM 3C16671A SuperStack II Hub 10 24 Port	\$1260
3COM 3C16675B SuperStack II Hub 10 48 Port	\$2880
3COM 3C16700 OfficeConnect 8/TPO	\$2650
3COM 3C16701 OfficeConnect 8/TPC	\$ 1 1 5
3COM 3C16702 OfficeConnect 16/TPC	\$ 2 9 4
3COM 3C16704 OfficeConnect 4/TPO	\$ 8 8
3COM 3C16710 OfficeConnect 8/TPM	\$ 4 8 0
CNet CN8800TPC 8 Port Hub	\$ 1 0 8
CNet CN8816TPC 16 Port Hub, Small Footprint	\$ 2 2 8
D-Link DE-805 TP/C 5 Port Hub	\$ 9 0
D-Link DE-809TC 8 Port Hub	\$ 1 2 0
D-Link DE-812TP+ 12 Port Hub	\$ 2 2 0
D-Link DE-816TP 16 Port Hub	\$ 2 4 7

D-Link DE-824TP 24 Port Hub	\$ 3 9 0
Intel InBusiness SH10T5 5 Port Hub	\$ 9 3
Intel InBusiness SH10T 8 Port Hub	\$ 1 1 6
Intel InBusiness SH10T8 8 Port Hub (with coax)	\$ 1 4 8
Intel InBusiness SH10TPS Internet Station	\$ 5 7 4
Netgear EN104TP 4 Port Hub	\$ 6 5
Netgear EN108TP 8 Port Hub	\$ 8 5
SMC 3605T-EZ 5 Port Hub	\$ 7 5
SMC 3608TAC-EZ 8 Port Hub	\$ 1 2 8
SMC 3616TC-EZ 16 Port Hub	\$ 2 1 6
SMC 3206TA TigerHub 6 Port Hub	\$ 2 3 8
SMC 3206BC TigerHub 6 Port Hub BNC	\$ 8 6 0
SMC 3206FC TigerHub 6 Port Fibre	\$1960
SMC 3312TA TigerStack 12 Port Hub	\$ 6 3 5
SMC 3326TA TigerStack 26 Port Hub	\$1120
SMC 3328T TigerStack 28 Port Hub	\$1190

10 BaseT Adapters

3COM 3C509B TPO	\$ 7 9
3COM 3C900 TPO PCI	\$ 1 3 8
D-Link DE-220PT ISA Ethernet 10BaseT	\$ 3 5
D-Link DE-530T+ PCI Ethernet 10BaseT	\$ 5 3
Intel ISA EtherExpress Pro 10+ 10BaseT	\$ 7 7
Intel ISA EtherExpress Pro 10+/Flash 10BaseT	\$ 9 4
Intel PCI EtherExpress Pro 10+ 10BaseT	\$ 1 1 3
Kingston EtherX PCI 10BaseT	\$ 6 0
SMC PCI EzCard 10BaseT	\$ 4 3
SMC 8416T ISA EtherEZ 10BaseT	\$ 7 9
SMC 8432T PCI EtherPower 10BaseT	\$ 9 0

Switches

3COM 3C16730 OfficeConnect Switch 4 10BT/1 100B-TX	\$ 5 6 9
3COM 3C16732 OfficeConnect Switch 8 10BT/2 100B-TX	\$ 8 5 5
3COM 3C16901A SuperStack II 12BT/1 100B-TX	\$2280
3COM 3C16900A SuperStack II 24BT/1 100B-TX	\$3200
Intel InBusiness SH10T8 Switch 8 10BT	\$ 7 3 0
Intel InBusiness SH110TX8 Switch 8 10BT/2 100B-TX	\$1055
Netgear SW510NA 10/100 Switch 8 10BT/2 100B-TX	\$ 8 2 5
Netgear SW518NA 10/100 Switch 16 10BT/2 100B-TX	\$1250

100 Mbps Systems

3COM 3C905 TX PCI Fast Ethernet Adapter	\$88.00
3COM 3C905-TX FastEthernet PCI	\$ 8 8
3COM 3C597-TX FastEthernet EISA	\$ 3 3 0
3COM 3C16722 OfficeConnectFastEthernet 8 Port Hub	\$ 5 1 0
3COM 3C16723 OfficeConnect FastEthernet 4 Port Hub	\$ 2 8 2
3COM 3C250B-TX/I SuperStack II 100 12 Port Hub	\$1660
3COM 3C250-T4 SuperStack II 100 12 Port Hub	\$1850
D-Link DFE-500TX PCI FastEthernet	\$ 8 0
D-Link DFE-808TX FastEthernet 8 Port Hub	\$ 5 9 9
HP DeskDirect 100VG PCI Adapter	\$ 1 7 5
Intel Pro 100 PCI FastEthernet	\$ 9 5
Intel Pro 100 PCI Server Adapter	\$ 7 0 0
Intel Pro 100 Smart FastEthernet	\$1030
Intel InBusiness SH100TX4 FastEthernet 4 Port Hub	\$ 2 8 5
Intel InBusiness SH100TX8 FastEthernet 8 Port Hub	\$ 5 2 0
Intel InBusiness SH110TX8 FastEthernet 8 Port Hub Plus	\$1020
Netgear FA310TX 10/100 PCI FastEthernet	\$ 5 4
Netgear FE104NA 10/100 4 Port Hub	\$ 1 8 5
Netgear FE108NA 10/100 8 Port Hub	\$ 3 2 0
SMC 9432TX Etherpower 10/100Base-T PCI	\$ 9 9
SMC Etherpower 10/100 PCI Dual Channel	\$ 3 4 5
SMC 5208tx TigerHub 10/100 8 Port Hub	\$ 6 0 0

Systems Inc. <http://www.mconcept.com>

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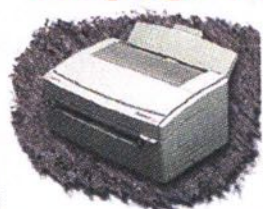


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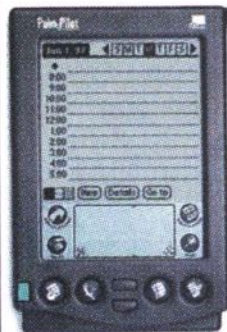
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DOT-MATRIX

OKIDATA Printer

Model N/W	CPS	Pin	Price
ML184	300	9	\$355
ML320/321	435	9	\$490/670
ML520/521	435	9	\$583/783
ML390/391	390	24	\$506/676
ML395/Color	607	24	\$1510/1623
ML590/591	360	24	\$680/970

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Palm Pilot Professional

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Canon

BJC-250 Inkjet Printer



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3Com

3C16700 OfficeConnect

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The Ethernet Network Hub You Can Install in Less Than 10 Minutes

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- Max. 4800x4800 dpi
- Optical 300x600 dpi

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- Optical 300x600 dpi

Disco Storage

Seagate



Capacity	Model	Access	Cache	RPM	Interface	Price
4.5GB	ST34555N	9ms	512K	7200	ULTRA SCSI	\$ 485
4.5GB	ST34555W	9ms	512K	7200	ULTRA WIDE	\$ 520
4.5GB	ST34572N	9ms	512K	7200	ULTRA SCSI	\$ 780
4.5GB	ST34572W	9ms	512K	7200	ULTRA WIDE	\$ 820
4.5GB	ST34501N	7.5ms	512K	10000	ULTRA SCSI	\$ 878
4.5GB	ST34501W	7.5ms	512K	10000	ULTRA WIDE	\$ 920
9GB	ST19171N	9ms	512K	7200	ULTRA SCSI	\$1130
9GB	ST19171W	9ms	512K	7200	ULTRA WIDE	\$1175
9.1GB	ST39173LW	7.5ms	512K	7200	ULTRA 2 SCSI	\$1415
9GB	ST19101N	7.5ms	512K	10000	ULTRA SCSI	\$1395
9GB	ST19101W	7.5ms	512K	10000	ULTRA WIDE	\$1450
23GB	ST423451N	13ms	2MB	5400	ULTRA SCSI	\$2420
23GB	ST423451W	13ms	2MB	5400	ULTRA WIDE	\$2465
2GB	WD2170-0003	8ms	512K	7200	ULTRA SCSI	\$ 399
2GB	WD2170-0007	8ms	512K	7200	ULTRA WIDE	\$ 555
4GB	WD4360-0003	8ms	512K	7200	ULTRA SCSI	\$ 795
4GB	WD4360-0007	8ms	512K	7200	ULTRA WIDE	\$ 815
9.1GB	WD9100-0003	8ms	512K	7200	ULTRA SCSI	\$1190
9.1GB	WD9100-0007	8ms	512K	7200	ULTRA WIDE	\$1225
3.2GB	QM33240ST	10ms	128K	5400	ULTRA SCSI-3	\$ 365
4.3GB	QM34320ST	10ms	128K	5400	ULTRA SCSI-3	\$ 415
6.4GB	QM36480ST	10ms	128K	5400	ULTRA SCSI-3	\$ 545
8.4GB	QM38480SE	10ms	128K	5400	ULTRA SCSI-3	\$ 708

DIAMOND

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Killer 3D for your PC!

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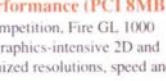
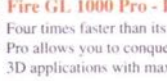
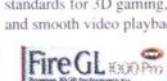
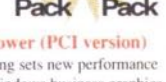
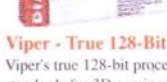
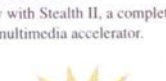
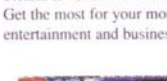
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100MB Media .. \$15.50

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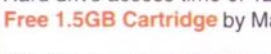
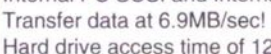
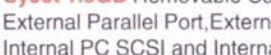
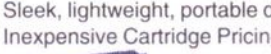
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Jaz 2GB SCSI External Drive

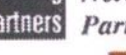
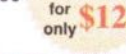
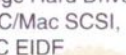
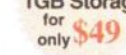
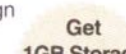
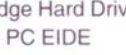
only \$ 880

1 GB Media \$119.00

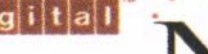
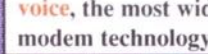
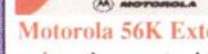
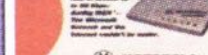
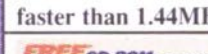
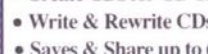
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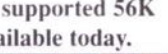
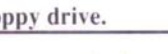
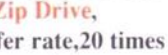
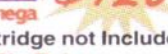
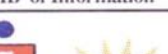
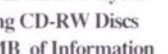
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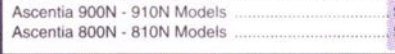
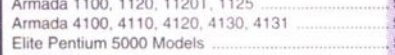
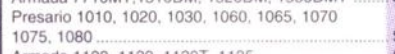
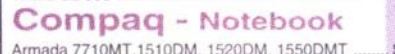
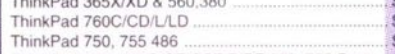
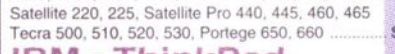
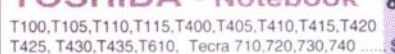
HEWLETT PACKARD



SafeStore 7200i CD-Writer Plus



Kingston



TOSHIBA - Notebook

8M/16M/32M

T100,T105,T110,T115,T400,T405,T410,T415,T420

T425, T430,T435,T610, Tecra 710,720,730,740

Satellite 220, 225, Satellite Pro 440, 445, 460, 465

Tecra 500, 510, 520, 530, Portege 650, 660

IBM - ThinkPad

ThinkPad 760E/ED/EL/ELD

ThinkPad 365X/D & 560,380

ThinkPad 760C/CD/L/LD

ThinkPad 750, 755 486

ThinkPad 345, 360C/CE/CSE/P/PE:370, 755 Pent.

ThinkPad 770

ThinkPad 350

Compaq - Notebook

Armada 7710MT,1510DM, 1520DM, 1550DMT

Presario 1010, 1020, 1030, 1060, 1065, 1070

1075, 1080

Armada 1100, 1120, 1120T, 1125

Armada 4100, 4110, 4120, 4130, 4131

Elite Pentium 5000 Models

AST - Notebook

Ascentia J Models

Ascentia 900N - 910N Models

Ascentia 800N - 810N Models

\$ 88/123/200

\$ 62/102/200

\$ 56/ 83/173

\$ 56/ 83/173

\$ 68/ 99/202

\$155/208/269

\$135/220

\$ Nil/ 93/186

\$ Nil/119

\$ 55/ 84/168

\$ 55/ 89/Nil

\$ 55/ 89/Nil

\$ 62/ 99/182

\$ 63/ 95/168

\$ 69/109

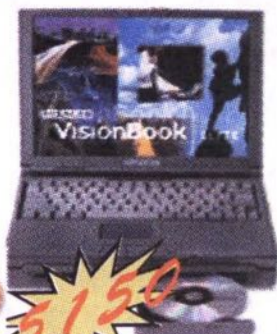
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20X CD-ROM
12.1" TFT Display
56KBps Data/Fax Modem



Model	CPU	RAM	HDD	CD	Display	Price
1560DM	166mmx	16MB	3.1GB	20X	12.1 DSTN	\$2,930
1592DMT	233mmx	32MB	3.1GB	20X	12.1 TFT	\$4,400
4160T	166mmx	16MB	2.0GB		12.1 TFT	\$3,725
4220T	266mmx	32MB	4.0GB	20X	12.1 TFT	\$5,250
7330T	150mmx	16MB	2.1GB		12.1 TFT	\$2,485
7350MT	166mmx	32MB	2.1GB		12.1 TFT	\$3,500
7360DMT	200mmx	32MB	3.0GB	20X	12.1 TFT	\$5,310
7370DMT	233mmx	32MB	4.0GB	20X	12.1 TFT	\$6,210
7380DMT	266mmx	32MB	4.0GB	20X	12.1 TFT	\$6,775
7710MT	150mmx	16MB	1.6GB		12.1 TFT	\$3,050
7730MT	166mmx	32MB	2.1GB		12.1 TFT	\$3,850
7750MT	166mmx	32MB	2.1GB		12.1 TFT	\$3,955
7770DMT	233mmx	32MB	3.0GB	20X	12.1 TFT	\$6,210
7790DMT	233mmx	32MB	5.0GB	20X	13.3 TFT	\$7,550
7792DMT	266mmx	32MB	5.0GB	20X	13.3 TFT	\$7,680

Model	CPU	RAM	HDD	CD	Display	Price
VBPlus 150	150mmx	16MB	1.4GB	10X	12.1 DSTN	\$1,930
VBPlus 166	166mmx	16MB	2.1GB	20X	12.1 DSTN	\$2,395
VBPlus 233	233mmx	32MB	3.2GB	20X	12.1 DSTN	\$3,245
VBPro 166	166mmx	32MB	2.1GB	10X	12.1 TFT	\$3,140
VBPro 166	166mmx	32MB	3.0GB	10X	13.3 TFT	\$3,495
VBPro 233	233mmx	32MB	3.2GB	20X	13.3 TFT	\$5,150
VBPro 266	266mmx	48MB	4.0GB	20X	13.3 TFT	\$6,730
Traveler 133	133mmx	24MB	1.0GB		8.4 TFT	\$2,820



IBM

ThinkPad

Model	CPU	RAM	HDD	CD	Display	Price
310ED	133mmx	16MB	1.6GB	10X	12.1 DSTN	\$2,025
380ED	166mmx	16MB	2.1GB	20X	12.1 DSTN	\$2,740
380ED	166mmx	16MB	3.0GB	20X	12.1 TFT	\$3,900
380ED	166mmx	16MB	5.1GB	20X	12.1 TFT	\$4,300
380XD	233mmx	32MB	3.2GB	24X	12.1 HPA	\$3,620
380XD	233mmx	32MB	4.0GB	24X	12.1 TFT	\$4,790
380XD	233mmx	32MB	5.1GB	24X	12.1 TFT	\$5,470
560X	233mmx	32MB	4.0GB		12.1 TFT	\$4,890
770	200mmx	32MB	3.2GB		13.3 TFT	\$5,575
770	233mmx	32MB	4.0GB		13.3 TFT	\$6,450
770	233mmx	32MB	5.1GB		14.1 TFT	\$7,630

Philips

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3.8GB Hard Drive
4MB SGRAM
12.1" TFT Active
20X CD ROM
Built-in Sound System
K56flex Data/Fax/Voice Modem



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Satellite Pro 480CDT

233MHz Intel Pentium MMX
32MB RAM exp. to 144MB
3.8GB Hard Drive
2MB EDO Video RAM
12.1" TFT Active
10X CD ROM
33.6/14.4KBps Data/Fax/Voice Modem
Built-in Sound System



\$4980

Satellite 300CDS

166MHz Intel Pentium MMX
256KB Level 2 Cache
16MB RAM exp. to 144MB
2.1GB Hard Drive
2MB EDO Video RAM
12.1" DSTN
16X CD ROM
Built-in Sound System



\$2330

Model	CPU	RAM	HDD	Display	Price
300CDS	P166	16MB	2.1GB	12.1 DSTN	\$2,330
310CDS	P200	32MB	2.1GB	12.1 DSTN	\$3,000
460CDX	P166	32MB	2.1GB	12.1 DSTN	\$2,420
460CDT	P166	32MB	2.1GB	12.1 TFT	\$3,740
470CDT	P200	32MB	2.1GB	12.1 TFT	\$4,200
480CDT	P233	32MB	3.8GB	12.1 TFT	\$4,980
550CDT	P266	32MB	3.8GB	12.1 TFT	\$5,600
300CT	P133	32MB	1.5GB	10.4 TFT	\$2,820
320CT	P266	32MB	3.8GB	10.4 TFT	\$5,250
750DVD	P233	64MB	5.1GB	13.3 TFT	\$7,599
50CT	P75	16MB	810MB	6.1 TFT	\$1,640
70CT	P120	16MB	1.5GB	6.1 TFT	\$2,820

PCMCIA / MODEMS

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Adaptec APA-1460A SlimSCSI Kit	\$235.00
Adaptec APA-1480A SlimSCSI Kit (CardBus)	\$285.00
3Com 3C589D-TP EtherLink III PCMCIA	\$182.00
3Com 3C575-TX FastEthernet 10/100 CardBus	\$218.00
3Com 3C574-TX FastEthernet TX 10/100	\$218.00
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Intel EtherExpress Pro 100 16bit PC Card	\$218.00
Intel EtherExpress Pro 100 32bit Card Bus	\$225.00
Kingston EtherX PCMCIA Ethernet Combo	\$135.00
Megahertz XJ10BT PCMCIA 10BaseT Ethernet	\$150.00
Megahertz XJ10BC PCMCIA Ethernet Combo	\$185.00
Megahertz XJ1336 33.6 Modem 56K upgrade	\$250.00
Megahertz CC4336 33.6 PCMCIA Modem	\$315.00
Megahertz XJ4336 33.6 X-Jack Modem	\$310.00
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Megahertz 3CXEM556C 56K Modem+10BT/2	\$443.00
Megahertz 3CCFEM556 56K Modem+10/100BT	\$485.00
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New Media BASICS SCSI Adapter DB25	\$125.00
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BIGDISK

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Fortunately, Synchronys has a solution... BigDisk.

Finally, applications and data are free to move from disk to disk, without the worry! Break the artificial drive boundaries... and let all your drives act like one big disk.

Let's say you need to install your favorite office suite. No problem. Extend your C: drive with a quick slide and click.

HOW MUCH SPACE DO YOU WANT?

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You want to move Office 97, Netscape Navigator and Corel Draw from your C: to D: drive (and still run Windows). Piece of cake. Safely move any app folder to another drive with a point & click.

BigDisk's patent-pending technology frees up space that ordinary disk utilities can't. Plus, it's 100% safe-use the Undo feature to restore your files back to their original location. You can always see which files have been moved. And BigDisk identifies critical system files, and prevents you from moving them.

Product Comparison Chart

Features	PowerQuest DriveCopy	PowerQuest Drive Image	PowerQuest Drive Image Pro
Copy the entire contents of one drive to another drive within the same computer	X	X	X
Copy individual partitions or entire drive		X	X
Create and restore hard-drive image files		X	X
Create and store hard-drive image files for backup, upgrades and system recovery		X	X
Change partition size once after copying to destination		X	X
PartitionMagic's create, resize and move technology for use on the source or destination drive			X
Create and store image files to set up multiple workstations over a network			X
Drive Image File Editor			X
Multiple workstation or site license available			X
Command line scripting			X
Your Cost	\$38	\$89	\$979



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PartitionMagic

Reduce Wasted Disk Space

Dynamically Resize Clusters

PartitionMagic's simple user interface lets you dynamically create, resize, format, and move hard disk partitions. By shrinking large FAT partitions, PartitionMagic automatically reduces the cluster size to regain up to hundreds of megabytes of lost disk storage space.

Manage Multiple Operation Systems

Best of All Worlds

PartitionMagic makes it easy to run multiple operating systems on one machine without compatibility problems. Now you can explore the new world of Windows 95 or NT while still relying on the security of your current operating system.

Easily Switch Between OSs

PartitionMagic is the only partition management software that includes Boot Manager from IBM, allowing you to easily select an operating

Organize and Protect Data

Protect Your Data Files

Create a separate, secure partition for your valuable data files to protect them from potentially unstable applications. This makes backups a snap, especially with Zip drives because you only back up the data partition, not the whole hard disk.

Move Applications Intact

PartitionMagic includes the Move feature of Uninstaller by MicroHelp, to simplify moving applications from one partition to another, along with all their related files and operating system settings.

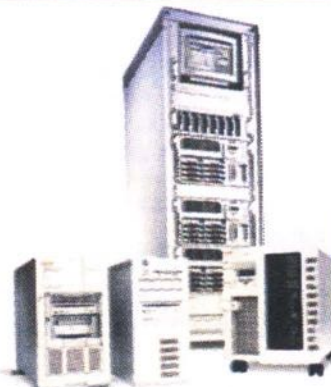
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	OPTIQUEST. Q53	0.28mm	1280x1024	13.8"	30-70KHz	\$ 335
	OPTIQUEST. V655	0.28mm	1280x1024	13.8"	30-70KHz	\$ 355
	ViewSonic E655	0.28mm	1280x1024	13.8"	30-70KHz	\$ 355
	ViewSonic 15GS	0.27mm	1280x1024	14.0"	30-69KHz	\$ 435
	ViewSonic 15GA	0.27mm	1280x1024	14.0"	30-69KHz	\$ 460
17"	OPTIQUEST. Q71	0.28mm	1280x1024	16.0"	30-70KHz	\$ 540
	OPTIQUEST. V773	0.26mm	1280x1024	15.8"	30-69KHz	\$ 630
	OPTIQUEST. V775	0.26mm	1600x1280	16.0"	30-85KHz	\$ 735
	ViewSonic G773	0.26mm	1280x1024	16.0"	30-70KHz	\$ 700
	ViewSonic 17GA	0.27mm	1280x1024	16.0"	30-69KHz	\$ 765
	ViewSonic GS771	0.27mm	1280x1024	16.0"	30-70KHz	\$ 690
19"	ViewSonic GT770	0.25mm	1280x1024	15.9"	31-64KHz	\$ 870
	ViewSonic GT775	0.25mm	1600x1280	16.0"	30-80KHz	\$ 875
	ViewSonic P775	0.25mm	1600x1280	16.0"	30-95KHz	\$ 835
	ViewSonic PT775	0.25mm	1600x1280	16.0"	30-96KHz	\$ 985
	OPTIQUEST. V95	0.26mm	1600x1280	18.0"	30-95KHz	\$1,099
	ViewSonic G790	0.26mm	1600x1280	18.0"	30-95KHz	\$1,150
21"	ViewSonic G800	0.28mm	1600x1280	18.4"	30-86KHz	\$1,465
	ViewSonic G810	0.25mm	1600x1280	20.0"	30-89KHz	\$1,465
	ViewSonic P810	0.25mm	1600x1280	20.0"	30-95KHz	\$1,630
	ViewSonic P815	0.25mm	1800x1440	20.0"	30-115KHz	\$1,870



COMPAQ

Best Network Server 1997



ProSignia Series

Model	CPU	RAM	Controller	CDR	Ethernet	Price
200	233MHz Pentium II	32MB	EIDE	16x	10/100TX	\$ 2,175
200	233MHz Pentium II	32MB	SCSI-3	16x	10/100TX	\$ 2,445

Proliant Series

Model	CPU	RAM	Controller	CDR	Ethernet	Price
1200	233MHz Pentium II	32MB	SCSI-3	16x	10/100TX	\$ 4,475
1600	266MHz Pentium II	64MB	SCSI-3	16x	10/100TX	\$ 5,490
1600	300MHz Pentium II	64MB	SCSI-3	16x	10/100TX	\$ 5,970
3000	300MHz Pentium II	64MB	SCSI-3	16x	10/100TX	\$ 7,050
5500	200MHz Pentium Pro	128MB	SCSI-3	16x	10/100TX	\$11,935
512KB L2 Cache, Maximum 4 CPU						
6000	200MHz Pentium Pro	128MB	SCSI-3	16x	10/100TX	\$13,980
512KB L2 Cache, Maximum 4 CPU, Built-in I ₂ O support						
6500	200MHz Pentium Pro	128MB	SCSI-3	16x	10/100TX	\$19,445
512KB L2 Cache, Maximum 4 CPU, Built-in I ₂ O support						
7000	200MHz Pentium Pro	128MB	Smart Array 16x	10/100TX		\$30,850
512KB L2 Cache, Maximum 8 CPU, Built-in I ₂ O support						

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- Cisco 760 series router
- Domain Name Service
- 20 E-mail boxes at your domain
- Management tools via NETCOM Business Centre

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FROM PAPER TO PIXELS



Publishing on Pixels & Paper

New technologies make everyone a potential magnate

BY EMRU TOWNSEND

When you think of a publisher, what usually comes to mind? Maybe Conrad Black, Citizen Kane, or other impossibly rich fat cats who manage empires of books, magazines, and newspapers (cigars are optional).

Once, this was more or less true. Then along came the personal computer. Some say the defining change was the introduction of affordable desktop publishing software for this platform. Others say it was the introduction of the Macintosh. Still others say it was the introduction of the laser printer.

Whatever the case, the notion of creating your own publication is no longer the impossible dream that it once was. Downward-spiraling costs have played a part (a laser printer which once sold for \$5,000 can now be bought for \$700, for instance) in making it feasible for an individual to create a professional-looking book, magazine, or newsletter with one computer and some printing know-how.

Still, books and magazines have remained unchanged for a long time. In recent years, the world of publishing has undergone a more dramatic shift, thanks to (what else?) the Internet. Even with the personal publishing revolution, people with lofty ambitions still had to contend with the problems of printing costs and distribution. The Internet has changed all that, especially with the popularity of the World Wide Web. "Printing costs" can now be as little as the \$20 monthly fee for connecting to an Internet service provider (ISP), and creating a Web site that has the potential to be accessed by millions.

Using electrons for ink

What is particularly interesting about

the Internet's invasion of the publishing world is the transformation it has wrought on the publishing landscape. First of all, URLs (uniform resource locator—more commonly known as the Web site address) on magazine mastheads have gone from being rare curiosities to commonplace in the space of about three years. Publications large and small have staked cyberspace claims, stampeding to gain some sort of Web presence. It's reminiscent of the rush from radio to television.

But as we all know, television only really got interesting when broadcasters stopped imitating radio and vaudeville, and innovators started coming up with original material that exploited the new medium. Similarly, the most exciting part of the online publishing revolution comes from the strictly online efforts—the publications that have no ties to the world of pulp and paper.

For instance, Salon (<http://www.salonmag.com>) covers news, entertainment, and general commentary, attracting contributors such as Camille Paglia, Tom Tomorrow, Christopher Hitchens, and Jon Carroll, as well as a host of talented young up-and-comers. Salon takes advantage of the Web by making past articles accessible via a search engine, and by updating the "magazine" in a modular fashion. Rather than waiting for a new "issue" to come out before changing the content, certain articles and columns are updated on different days of the week.

CNet's News.Com (<http://www.news.com>) takes it a step fur-

ther; rather than being an online magazine, it's more like an online newspaper, with updates coming in and headlines being rearranged in hours instead of days. Naturally, the articles are archived and available at any time. Each article is also extensively hyperlinked, permitting easy access to relevant background information. News.Com also includes RealAudio newscasts, combining text and audio in a way that can only be accomplished on the Internet. Flexible records and CDs bundled with music magazines pale in comparison.

And then there's Animation World Magazine (<http://www.awn.com/mag>), the official publication of Animation World Network, also an entirely online entity. The monthly magazine

provides animation aficionados with news, reviews, and interviews in two ways: either by the online articles (sometimes incorporating video clips so readers can see what is being reviewed), which are posted on the Web site on the first day of each month, or by the downloadable edition of the magazine, which is made available on the 15th of the month. The downloadable edition has no multimedia elements, but is structured more like a traditional magazine.

These examples are just the tip of the iceberg. Smaller publications and lone voices that are not affiliated with big companies also thrive online. The sentiment seems to be, "Why wait for

Continued on page 29

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help of optical character recognition (OCR) capability, approximates the layout and text as best as possible in PDF format.

Either way, once a PDF has been generated, Acrobat Exchange can be used to create hyperlinks and bookmarks, as well as for embedding sound and video. Acrobat Catalog can build searchable indices of PDF files.

Although these descriptions are simplistic, the Acrobat family is very powerful. The files can be used for document collaboration and prepress work, which can be a bonus when, say, a magazine's production team is scattered geographically. There is also a wide variety of third-party plug-ins for Acrobat Exchange.—Emru Townsend

Paper documents and Web pages can be created with a variety of tools, but the only way to create PDF (portable document file) documents is with Adobe Acrobat. The package's two main creation tools are Acrobat PDFWriter and Acrobat Distiller, which can be used to divert printed output into a PDF, or to convert an existing PostScript file into a PDF. Another alternative is to use Acrobat Capture, which scans an existing paper document and, with the

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


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FROM PAPER TO PIXELS

New technology balkanizes Web development

In case you missed it, the Web is the site for three "wars":

Microsoft against Netscape for browser supremacy;

Microsoft against Java infidels for Internet application

development supremacy; and Microsoft against

Network Computers to defend its Windows franchise.

BY JACQUES SURVEYER

Web site developers and page designers will be affected by these battle fronts, because a lot of the new technologies and strategies being promoted for Web development are a consequence of these wars. DHTML (dynamic hypertext markup language), CSS (cascading style sheets), CSS-P (CSS-positioning), and XML (extensible markup language) have already started to appear in Navigator 4.0 and Internet Explorer 4.0 browsers.

More importantly, these features are showing up in Web development tools such as Macromedia's new Dreamweaver, Pictorius' INet Developer and SoftQuad's HoTMetal Pro 4.0. Surprisingly, they are showing up only in small dabs in leading Web authoring tools such as Adobe's PageMill 3.0, Microsoft's Front Page 98, and NetObjects Fusion 2.0.

In addition, XML is rapidly being positioned as the storage format of choice for all office application suite documents. Corel, Lotus and Microsoft are all moving rapidly to offer files stored in XML-based format as a standard alternative storage format for their word processing, spreadsheet and presentation programs. Indeed, HTML and/or XML are increasingly being supported as standard format for Help files, CD-ROM authoring tools, and desktop publishing. The implications are staggering because a move to much more standardized format could reduce the myriad of .asc, .doc, .hlp, .pdf, .wp, etc file formats.

How we got here

To understand these developments, we must go back to the summer of 1995 when two frenzies and a surprise were taking place.

First, the Internet, due to the success of the Mosaic and then Netscape Navigator browsers, was not just taking off it was blasting off, with growth in new users reaching a rate of 35 percent per month. Literally, the Net brought the world to your fingertips.

At the same time, having whipped up a frenzy over Windows 95, Microsoft hoped to launch its rival to the Internet, MSN (the Microsoft Network), with the added boost that the MSN icon and program was preloaded on the desktop of every Win 95 screen. Just three months later, Dec. 7, 1995, Microsoft boss Bill Gates threw in the towel and vowed to wrap MSN into the Internet and develop superior Internet programming.

Meanwhile, the surprise of 1995 was the announcement of Sun's Java programming language, which was not only highly secure, but capable of running on any operating system that had a Java virtual machine (JVM).

Netscape, the leader in Internet browsers with a 80 percent market share, adopted Java for use as primary programming language for the Net. It did so first in a derivative, simplified form known as JavaScript and in pure form as Java applets or programs capable of being run from any browser.



Free for all

Part of the reason Netscape gained a dominant share of the browser market was good technology at a low price—\$50, or a free trial version, which could easily be downloaded from its Web site.

Playing catch up, Microsoft announced in early 1996 that not only its browser but also its Web server would be free for all time (and thus the die was cast for the current U.S. Department of Justice legal action against Microsoft). In addition, Microsoft renewed its promise to become a major innovative force in Web software.

And Java started to take off. Not just Microsoft but every major hardware and software vendor including Apple, IBM, Oracle, Sybase, etc. licensed Sun's Java. Quickly, there was a second roll of the competitive die.

IBM's adoption of Java typifies Java's appeal. Because a Java application can be written once and then run on any operating system that has a JVM, Java solves a major problem for IBM. The largest computer vendor currently supports six different operating systems in its product offerings: MVS, VM, OS/400, Unix, OS/2, and Windows.

In fact, all the major legacy operating systems suddenly had new life, because through the use of either Java applets in a browser or Java applications, all the benefits of a graphical user interface (GUI) and the latest software innovations can easily be brought to a wide range of legacy systems. Thus, Netware's recovery strategy is built on this very Java capability. For Microsoft, which would like to extend its desktop operating system monopoly to the server side, these developments presented a conundrum.

On one hand, Microsoft was committed to the very best and open Web development standards and tools, including Java. On the other, its Windows NT momentum could ill afford to see legacy operating systems like Unix, OS/2,

Netware, OpenVMS gain new life blood through Java-based applications.

Heretofore, Microsoft's advantage lay in developing the newest and largest stock of software for Windows. But now Java applets could negate that advantage. Enter from the east coast and the left coast the final major players in our Web development drama.

In 1996, Gartner Group did a study showing that the total cost of ownership of a Windows PC was over \$10,000 per year versus figures of roughly 30 to 40 percent less for terminal-based mainframe and Unix applications. On the west coast, Oracle head Larry Ellison seized on this study to advance his concept of the NC (Network Computer) machine.

The appeal of the NC machine is not just the purchase price (targeted for less than \$500, although the first NCs from IBM and Sun hover closer to \$1,000) but also the lower ongoing costs associated with software/hardware update, training and administration. And the key software ingredient for NCs? You guessed it—Java running from a browser or as a native application.

This posed a further threat to Microsoft's Windows franchise. To make matters worse, software developers were moving to Java in droves. In June of 1996, the JavaWorld Web site had a list of 60 to 70 Java development tools. By June of 1997 the number of Java development tools had grown to more than 320.

The best newly released software for Windows on exhibit at the September 1997 Microsoft Professional Developers Conference (PDC) was either Java based or from IBM (IBM DB2 Universal Database Server, IBM ViaVoice Recognition SDK and IBM Visual Age Program Generator).

Microsoft should not be surprised that software innovation is gravitating towards Java. Of 65 software companies doing some business in the Windows market, nearly half are unprofitable; at the same time Microsoft takes nearly 60 percent of all the profits yet only needs about 28 percent of the revenues to do so. A Java program at least provides a company with some insulation the need to go head to head with Microsoft.

Latest developments

Internet Explorer 4.0 was officially released two days after the PDC, and a day after that Sun sued Microsoft for breach of its Java licence as implemented in Internet Explorer 4.0.

At the PDC conference there were strong intimations of a new Microsoft strategy towards Java and Web development. After dutifully praising Java, Microsoft vice-president Paul Maritz, went on to suggest that Java could be replaced by DHTML and XML on the client side. On the server side, Microsoft was recommending VB/VC++ servlets, ActiveX and/or COM/DCOM in preference to Java.

This strategy serves three functions. First, it emphasizes use of DHTML extensions like CSS, CSS-P, CDF (channel definition format, a.k.a. push format), and DOM (dynamic HTML object

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
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FROM PAPER TO PIXELS

Essential Web creation tools

BY LINDA RICHARDS

The task sounds simple: you want a Web page. Somewhere at the back of your mind you know that this isn't an Earth-shattering challenge.

You've heard that any talented 11-year-old can make a Web page. Maybe you've even seen the work that some of these genius-level munchkins can do. Somehow, though, it doesn't make you feel any better. In fact, it makes you feel worse.

How is it that all of these people—your kid, your sister, your great aunt Edna—seem able to toss out whole Web sites at the drop of a disk and you're still hyperventilating at the thought of it?

Relax. Creating a Web page—or even a whole site—is relatively easy. Like all things, place one foot in front of the other and walk. The real challenge is creating a good one. But that's a topic for another article. Just doing it, however, is simple. Especially now that there are so many really dynamite tools available to help you.

HTML: the heart of the matter

There are lots of good tools available to help you create your Web pages. Some of them so point-and-click and easy-to-use that you really don't need to know what the program is actually doing. But it helps.

Most of the Web page creation tools we talk about in this article boast some element of WYSIWYG (what you see is what you get). That is, you point-and-click and the program does a lot of cool stuff. Not the least of this cool stuff is to code your desires into HTML (hypertext mark-up language). Take note of the recipe for the acronym. It's a *markup* language as opposed to a *programming* language and it's what enables all these people on different computers and in different countries running on different platforms to see relatively the same thing when they look at a page on the World Wide Web.

All of the other stuff that a page creation program might offer to do—add Java and VRML, managing your Web site, the ability to use cascading style sheets (CSS) and XML (extensible markup language)—is hung together by a program that manipulates HTML. Without a very good ability to do that, the rest of the stuff—and a lot of it is good stuff—falls aside.

Beyond the bells and whistles, then, all WYSIWYG HTML editors take your point-and-click desires and render them into HTML code. Simple, right? You'd think so.

There's code and then there's...

HTML is a written-in-stone type of markup language. That is, a standard exists whereby all of these computers can look at the same file and interpret it. The "official" HTML standard evolves in a very controlled way, and aberrations are generally frowned upon. And for good reason.

As with all standards, it's there for a reason: to make sure everyone keeps singing the same song and is able to read the same files. If you want to keep track of what the latest word from the HTML front is, you can check out the World Wide Web Consortium (W3C) at <http://www.w3.org/pub/WWW/>.

It's not a party site, and a lot of it is pretty high-level geek stuff, but this is the place to check for the latest scoop on changes to standards and protocols on the Web.

When the song they're singing...

So you'd think, with this standard in place, it would be a pretty easy thing to just... you know... do it, right?

Wrong. The two major Internet browsers—Microsoft Internet Explorer and Netscape Navigator—for instance, have very basic disagreements about the ideal way to present some esoteric material. Both require a different command in order to embed a sound into an HTML file. And if you want people using both types of browsers to hear the sound, you have to use both tags when designing your Web pages. A bit of a pain, but it's what you have to do to be able to say, "I'm cross-browser compliant."

Browser manufacturers aren't the only ones guilty of these aberrations. Producers of early WYSIWYG Web page creation tools seemed to find it impossible to create programs that could produce absolutely clean—and HTML-compliant—Web pages. Things are getting better, but you should still be entirely aware of the type of code your HTML editor is churning out, for two main reasons:

1. Non-compliant HTML can cause hang ups and crashes to people visiting your site. In a time when everyone is fishing desperately for all the Web surfers they can grab, alienating people who come to see your site by crashing their computers seems like a bad idea.

2. Extraneous code (i.e., stuff that is HTML compliant but says things in a redundant way) makes your files longer. Longer files mean site visitors have to wait longer for your pages to load. This doesn't seem like such a smooth idea either.

In a time when everyone is fishing desperately for all the Web surfers they can grab, alienating people who come to see your site by crashing their computers seems like a bad idea.



Checking your code

Whether you created your Web pages by hand or with the help of a fancy editor, you can easily check the status of your HTML online. There are a few excellent site checkers on the Web. They all work in pretty much the same way. You surf to the Web checker's site and input the URL (uniform resource locator) of the page you want checked. The checker goes off and inspects your page for various flaws and comes back with a report (in an incredibly short time, considering what it does).

Most of these site checkers offer some free services and some pay services. But the free services are good enough to check the quality of your code, as well as give you a taste of what is available for a fee. Here are two good site checkers on the Web:

- **The Web Site Garage:** Of the two listed here, Web Site Garage checks more stuff for less. It also has a very cool interface and (for free) checks things like your site's popularity (as in how many people have linked to you) and how your graphics could be minimized. <http://www.website-garage.com>

- **Dr. HTML:** Dr. HTML has been around the longest, has the biggest following and checks more of your code. It also gives you less for nothing, in that it only lets you check five single pages on a trial basis. Still, the information you get from that inspection will be enough to put you on the right path.

<http://drhtml.imagiware.com/>

Carts before horses

Of course, code has to be created before it

can be checked. And there are two main ways to generate Web pages:

- **The old-fashioned way:** Sit down with an idea and a text editor and "hard code" your Web pages.
- **The new-fangled way:** Get your hands on a WYSIWYG Web page creator and go nuts.

While there is something to be said for both methods, the latter is certainly easier. Moreover, in this era of try-before-you-buy, many of the major packages have very good downloadable trial versions of their software. Check the Web sites listed next to the product's name to discover the status of their trial versions. There's nothing like test driving a product to see if it suits your vision and work habits.

Making a decision

It should be mentioned that this is far from a complete list of Web page creation tools available. The list of really great tools grows rapidly as more software companies scurry to catch a ride on the Internet gravy train. However, those included here are among the best out there.

As well, there's not one piece of software listed here that I absolutely did not like. If you want to create Web pages, any of these tools will do handily.

Base your decision on your own needs. Some of these tools have easier access to HTML code. For me, this is an important feature: it might not be for you. Some of them have better and more complete site management tools incorporated into the package. Again, for some users, this will be a factor. Other factors in your final decision will be the software your server runs, how important Java is to you, and how you personally react to the various interfaces.

Remember: even the simplest tool—Notepad on the PC and SimpleText on the Mac—are capable of creating Web pages that

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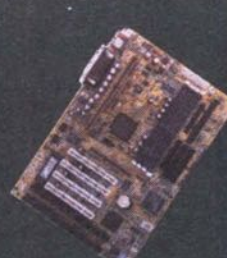
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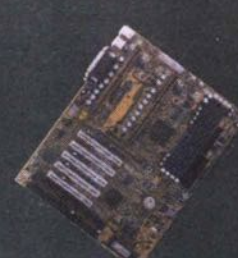
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I/O Panel	Venus	Venus	N/A	Venus	Venus
PCI/ISA Slot	4/3	4/3	4/2	4/2	5/2
Number of Slot	4 DIMM	4 DIMM	4 DIMM	4 DIMM	4 DIMM
DRAM Type	EDO/SDRAM	EDO/SDRAM	EDO/SDRAM	EDO/SDRAM	EDO/SDRAM
USB Connector	On board	On board	On board	On board	On board
ACOPS 98	Yes	Yes	Yes	Yes	Yes
SIV	Yes	Yes	Yes	Yes	Yes
LDCM	Yes	Yes	Yes	Yes	Yes
PS/2 Power-on	No	No	Yes	Yes	Yes
Keyboard Power-on	No	No	Yes	Yes	Yes
Wake on LAN	Yes	No	Yes	Yes	Yes
Creative PCI Support	No	No	Yes	Yes	Yes
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FROM PAPER TO PIXELS

Publishing on pixels & paper

Continued from page 22

someone else to produce something I'd like to see done?"

This latter tidbit is what excites most would-be publishers, as it rightly implies that getting words and pictures out—via paper, the Internet, intranets, CD-ROMs, or whatever's around the corner—has become a lot easier to accomplish.

Smaller publications and lone voices that are not affiliated with big companies also thrive online. The sentiment seems to be, "Why wait for someone else to produce something I'd like to see done?"

Words on paper

We can divide publishing into three media: paper, HTML (hypertext markup language), and PDF (portable document format). Paper requires no explanation, but there are some distinctions to be made between the tools used to produce paper-based documents.

Word as Web tool

Word 97 can be used to create Web pages in one of two ways: using Office 97's Web authoring tools to create a page from scratch, or the Save As HTML (hypertext markup language) function to convert existing documents.

Using Save As HTML is iffy. At best, it's a good way to take most of the work out of converting, but expect to do a lot of tweaking afterward. My test document's tables were flawlessly converted, but that was about it. Some boldface formatting ended up "leaking" into the next few sentences, some indents were cheerfully ignored, heading cross-references created in Word weren't converted to hyperlinks, but page number cross-references were—even though page numbers would be the first thing to go when converting a print document to HTML.

On the other hand, using the Web authoring tools was fairly agreeable, partly because Word optimizes its menus and functions for HTML when a Web page template is used. It's still not perfect, though. For example, Word didn't bother to save copies of my graphics along with the HTML, a problem that would stump a novice. Strangely enough, the Save As HTML function doesn't have this problem.

PDFs (portable document files) are an entirely different matter. Adobe's PDFMaker for Word 97, which is freely available from its Web site, can convert cross-references into hyperlinks, headings into bookmarks, and much more—and all at the touch of a button.—Emru Townsend

The most basic way to get words onto paper is with the venerable word processor. While originally designed to emulate a typewriter, the modern word processor incorporates enough features to make the most advanced typewriter jealous. With features such as columns, tables, graphics, rules, and drop caps now commonplace, it would seem that the prospective publisher/designer would need look no further—until you take a closer look.

The word processor's best feature is also its worst enemy: it tries to be all things to all people. Theoretically, you should be able to use the same program to create anything having to do with words: letters, business reports, brochures, user manuals, calendars, and more. Right?

Wrong. The tip off is in the name: word processor. Everything in a word processor document is secondary to the text itself. Almost

every document listed above uses graphics, text boxes, call outs, and other graphic elements. All of these features are available in word processors, and they work very well on their own, but they're forced to fit into the word processing model and not really suited for extensive use.

The main problem is in the way word processors are designed. They see documents

Continued on page 43

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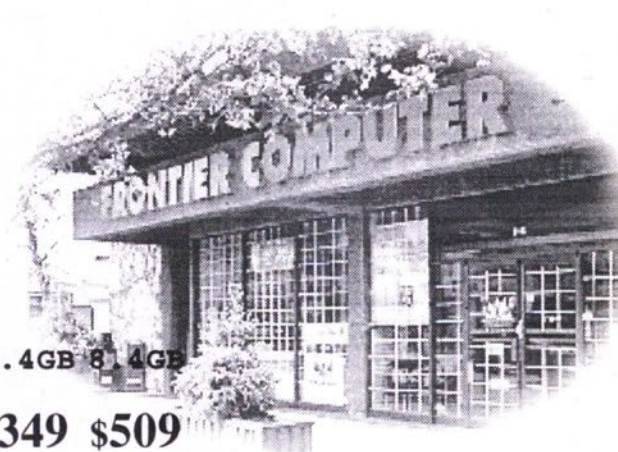
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FROM PAPER TO PIXELS

Essential Web creation tools

Continued from page 26

will work if you have the knowledge to input the necessary code. The right package will just make it all a whole lot easier.

Base your decision on your own needs. Some of these tools have easier access to HTML code. For me, this is an important feature: it might not be for you.

FrontPage 98

FrontPage 1.0 for Macintosh

From: Microsoft

<http://www.microsoft.com>

Platform: Windows 95/NT (FrontPage 98)

Platform: Macintosh (FrontPage 1.0)

System requirements Windows: 486 or higher processor, 16 MB of RAM (32 on NT), 36 MB of hard disk space, CD-ROM drive for installation.

System requirements Macintosh: 100 MHz or higher PowerPC based Mac, System 7.5.3 or higher, 16 MB of RAM, 30 MB available hard-disk space, CD-ROM drive, Mac-compatible monitor
Price: \$209.95

If you used this program early in its evolution and hated it, look again. It's a very different creature these days. For one thing, FrontPage 98 produces clean code—clean enough, anyway, to get past the toughest HTML checkers.

FrontPage is understandably more popular with dedicated Windows users, and the 98 version is only available for this platform (only version 1.0 is available for Mac users). Even more than its predecessors, 98 is meant to be an integral part of the Windows 95 environment. This is good news for those who dig heavily in Microsoft products. You can drag and drop content from Internet Explorer right into your Web pages.

I really like the way FrontPage 98 handles tables. You use a pencil tool to draw the table on screen. Other table controls—like changing your original drawing or specifying background color within a table—are almost as simple. Likewise, dropping Java Applets and other sophisticated Web technologies into your Web pages are accomplished with a simple point and click.

Like all things Microsoft, doing simple things is very easy in FrontPage 98. Going beyond the surface, however, can be slightly more challenging and require more time with your manual. However, FrontPage 98 is a very complete program, capable of filling the needs of most users.

Claris Home Page 3.0

From: FileMaker Inc.

<http://www.claris.com>

Platform: Macintosh, Windows 95/NT

System requirements Mac: 68020 processor or better, System 7.1 or higher, 12 MB RAM, CD-ROM drive.

System requirements Windows: Windows 95 or NT 3.5.1 or higher, 12 MB RAM (16 MB for NT), CD-ROM drive.

Price: \$99.95

The latest version of Home Page is a classic example of the modern software industry in action. Claris (now FileMaker through a recent reorganization) has taken a tool that I liked very much, added a bunch of cool new features that work very well, while allowing some of the very basic functions to come out kind of shoddy.

One of the cool new features Claris has touted most loudly is Home Page's ability to work seamlessly with its powerful database tool, FileMaker. (In fact, a very good trial version of FileMaker Pro 4.0 ships with Home Page 3.0.) And all that touting isn't empty. If a dynamic database is part of your site plan, the Home Page/FileMaker combo makes it pretty straightforward.

Other things have been added—the ability to specify background colors in frames, for instance—and the interface has been re-interpreted in many ways. Some of them are even better.

Like other packages, however, this latest has ballooned. A larger overhead is required to run it, and more hard drive space is required to store all the stuff shipped with Home Page. Most of us can live with that in this era of cheap hard drive storage and RAM.

However, the fact that typing directly into Home Page is now almost impossible due to the fact that it can't keep up with even moderate typing speed means that almost all copy has to be written prior to Webifying. At a time when an increasing number of people want to use their HTML program like a mini word processor in order to publish easily on the Web, this seems silly, as well as a step backward.

Home Page is still a powerful and easy-to-use package, however. And it still produces wonderfully clean HTML that looks like you coded it by hand.

BBEdit 4.5

From: Bare Bones Software Inc.

<http://www.barebones.com>

Platform: Macintosh

System requirements Mac: 68020 processor or better, System 7.0 or higher, 1 MB RAM, CD-ROM drive

Price: \$149.95

BBEdit is still among the most popular tools of Web designers working on the Mac platform. A non-WYSIWYG interface, BBEdition is increasingly being combined on the Mac designer's desktop by a WYSIWYG editor for the initial stages of Web design. Invariably, however, it's back to BBEdition for the final output prior to Web publication.

There are good reasons for this. The simplicity of the interface gives BBEdition a great deal of power that WYSIWYG Web page creation tools find tough to duplicate. Other tools seem to spend a lot of energy getting their products to do the coding invisibly, while BBEdition just forges ahead in other directions.

While BBEdition is, strictly speaking, a text editor, it does do a lot of things to make this editing easier and in some cases almost as invisible as other packages. For instance, because it's a text editor, it can read any HTML files created on any platform. Compatibility issues are not at issue. To look at the pages you've created, a page preview function lets you easily view files in a browser. Integrated spelling and syntax checkers help you make sure your code and your messages don't have any boo boos.

The latest versions also let you view and choose Web safe colors from within the program. As well, a graphical table builder allows you to construct tables in a comfortable and logical way.

And while HTML is the star in this program, BBEdition also supports Java, Perl, Pascal, ScriptX, TeX and a pile of other languages.

At present, BBEdition remains a Mac-only tool. However, the unofficial word on the street has it that a Windows version might be in the planning stages.

Visitors to the Web site will find a very nice Lite version of the program available for free download. It is not shareware, but freeware. A forward-thinking way of marketing that has helped Bare Bones Software remain a contender in an increasingly competitive field.

Adobe PageMill

From: Adobe

Web site: <http://www.adobe.com>

Platforms: Macintosh, Windows 95/NT

System requirements Macintosh: 68020 or greater processor, Mac System 7.1 or later, 8 MB of RAM with 4 MB available to PageMill, VGA or higher resolution monitor, CD-ROM drive.

System requirements Windows: 486 or greater processor, 8 MB of RAM (16 for NT), 10 MB available hard disk space, VGA or higher resolution monitor, CD-ROM drive.

Price: \$139.95

As I write this, the release version for both the Macintosh and Windows platforms is 2.0, but there is a version 3.0 available in a limited public beta for download at the Adobe Web site. No word as yet on when a Macintosh 3.0 version might be available.

Meanwhile, this Web page creation tool from the people who brought you Photoshop continues to be a solid choice for those who prefer the comfortable feel of a graphics program. After all, in many ways in so many fields, Adobe has redefined how graphics programs look.

PageMill is about as simple to use as anyone could wish, with true point and click and the solid feel of a really professional program. One annoyance, however, is the bits and pieces of proprietary PageMill code that litter this program—they don't actually hang any browsers, but they also don't seem to have any point.

Otherwise, Adobe has made a lovely, elegant interface that practically makes Web pages all by itself. Too bad the code is imperfect, but you'll be able to create simple pages quickly.

Mortar 2.0

From: Big Picture Multimedia

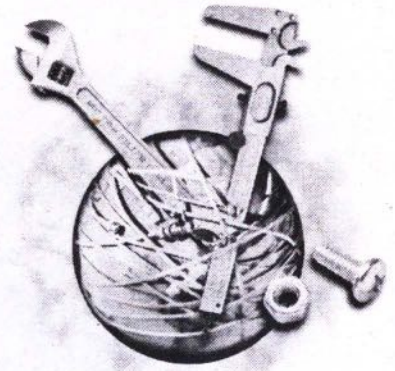
<http://www.bigpic.com>

Platforms: Windows 95/NT

System requirements: 8 MB of RAM (16 for Windows NT), hard disk with at least 20 MB of free space, 256-color display adapter, CD-ROM drive.

Price: \$399, \$49.95 (Mortar Lite)

Never mind the hip, retro feel of this program, Mortar is as businesslike as its name. Made in Canada by Big Picture Media of Calgary, Mortar isn't aimed at neophyte Webmasters. Rather, the target users are intermediate and advanced Web designers running large sites. So don't expect to point and click, Mortar's editor is an HTML environment that employs well-designed buttons to do everything from layout a table to add Java or work with cascading style sheets (CSS).



Everything about Mortar feels as rock solid as its name. The interface is elegant, the documentation is clear and refreshingly light. It's thorough, but the manual is not so large that it would break your foot if you dropped it. The help system is also very good.

The seriousness of the program can be judged by the software it is bundled with. Besides Internet Explorer, Mortar ships with Omnicon's HTTP 1.0 Compliant Web server and Sun's Java Development Kit. That should be enough to tell you that Mortar isn't a package for wimps or beginners.

One of the things I like best about this software is the sheer originality of Big Picture's approach. Mortar is utterly unlike any other program. The truly original software developers go through the bother of reinventing the wheel. And—sometimes—the whole industry benefits.

Dreamweaver

From: Macromedia

<http://www.macromedia.com>

Platforms: Windows 95/NT, Macintosh

System requirements Windows: Pentium 90 MHz, 16 MB of RAM, 640x480 256-color display or better, 20 MB free hard disk space.

System requirements Macintosh: PowerPC-based Mac, System 7.5.5 or higher, 24 MB RAM, 640x480 256-color display or better, 20 MB hard disk space.

Price: \$449.95

And then there's Dreamweaver. There have been precisely two times in my computing life when I've felt instantly at home and been instantly productive. The first time was moving from using a word processor on an old CP/M machine to a Mac. The second was using Dreamweaver.

This package's interface is both elegant and intuitive. Moreover, it is completely compatible with other Web page creation tools and all recognized browsers. The full version of Dreamweaver comes bundled with BBEdition (Macintosh version) or HomeSite (Windows version)—both of these text-based HTML editors are among the best for their platforms. Dreamweaver also comes with its own HTML editor, which is very easy to work with—practically dreamy, in fact.

Dreamweaver supports CSS, Java, DHTML, and all the other important stuff. It just appears to do it with less effort. Personally, I like programs that you never see sweat, and Dreamweaver is certainly one of these.

For instance, building tables and frames is virtually drag and drop. The code Dreamweaver creates is like homemade HTML, and it's very simple to toggle back and forth between the graphical editor previews of the code. In fact, it's so easy both can be onscreen at the same time and you can poke at one, then quickly prod at the other. My only question with a lot of Dreamweaver's features is, "Why hasn't someone done all this sooner?" □

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Pentium II 266 MHz CPU	\$599

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765L P166MMX/ 32M/ 3.0G SBpr/ 8x/ 13.3T	\$5,799
770 P200MMX/ 32M/ 3.2G/ 13.3TFT/ W	\$7,599
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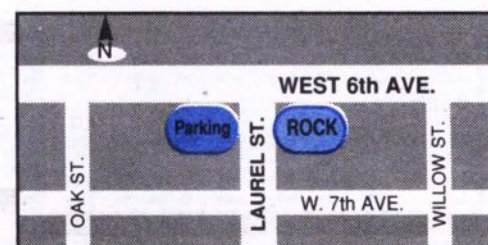
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FROM PAPER TO PIXELS

New technology balkanizes Web

Continued from page 24

and event model) where Microsoft has done much of the spade work in the W3C standards committees and leads Netscape in practical implementations. Second, it de-emphasizes Java development on the desktop, which might otherwise lead to a build up of nifty Java applet libraries that could then be ported to other competing operating system environs and NC machines. Third, by making its J/Direct library a key part of its VJ++ Java development system (J/Direct makes extensive use of non-portable but high-performance calls on the Windows API) Microsoft further reduces portability of Java applets and applications.

Alphabet soup: a few definitions

CDF: channel definition format
CSS: cascading style sheets
CSS-P: CSS-positioning
DHTML: dynamic hypertext markup language
DOM: dynamic HTML object and event model
HTML: hypertext markup language
JVM: Java virtual machine
NC: Network Computer machine
SGML: standard generalized markup language
RDF: Resource description framework
XML: extensible linking language
XSL: extensible stylesheet language
W3C: World Wide Web Consortium

And of course, Microsoft makes no apologies about vigorously defending its Windows franchise.

Because there is still no agreement on DHTML standards, Web software vendors have been forced to match three different standards in their Web development software.

Many Web authoring tools, including Microsoft's own Front Page 98 and Adobe new PageMill 3.0, have taken a lowest common denominator approach: i.e., only supporting HTML common to both major browsers. Others like Allaire's HomeSite 3.0 have adopted many Microsoft features preferentially. Finally a third set of Web authoring tools, such as MacroMedia's DreamWeaver and SoftQuad's HoTMetal Pro 4.0, support both Microsoft and Netscape features, allowing the developer to choose which browser to target for.

Both programs have scripts that dynamically determine the type of browser and implement the correct code, depending on the browser being used. However, it is fair to say that most Web development tools have backed off full implementation of DHTML, XML, and push technologies because of the current conflict between proposed browser standards.

In the case of XML, the very recent approval of a standard by W3C will allow for the delivery of new features for unique data display. As noted above, XML will be used by all the major suite vendors for storing their office suite files.

Because XML allows creation of unique HTML tag types, however software vendors can and will diverge in their created tags. The question remains whether they will be so divergent as to present no effective commonality of definition. Given recent history, we suspect so. In summary, users already pressed with Year 2000 problems, Euro conversions, and ever dwindling project times will have to factor in software vendors as sometimes being part of the problem. □

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Intel DK440LX, Dual P2	795

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Plextor 14/32x CD, SCSI	395
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Intel USB Video Camera	245

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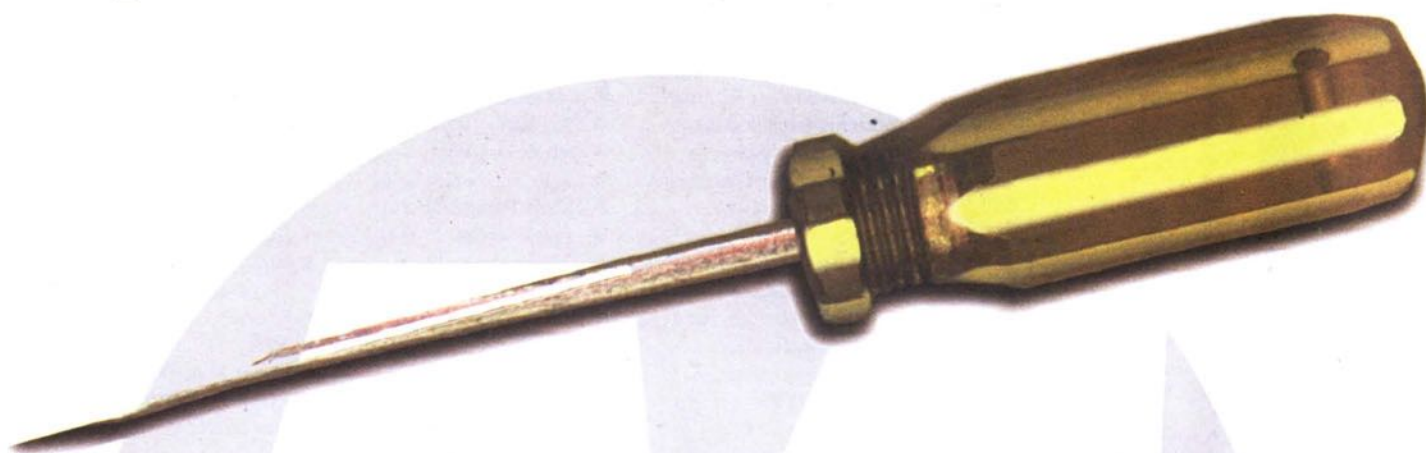
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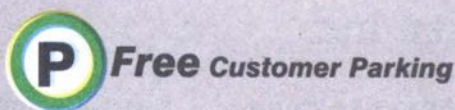
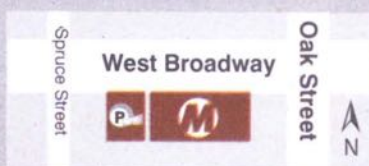
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FROM PAPER TO PIXELS

Pantone tools enhance color matching

BY SHERLY HO

Long before inexpensive computers and great software made desktop graphic arts a realistic pursuit, a common sight in studios was the Pantone color swatch. For more than 30 years the Pantone Matching System has been used by graphic artists to communicate color information. Thus, if an artist tells a printing company that the color of the client's logo is Pantone 185C, the printing company knows exactly what shade of red to use.

Pantone tools are now available for digital artists, and we look at a few of them here.

Pantone Personal Color Calibrator

From: Pantone Inc.

Tel: 201-935-5500, <http://www.pantone.com>

Platforms: Macintosh (tested), Windows 95

Price: \$64.95

This software helps you calibrate your monitor so that it displays colors accurately. It also adjusts the color output so what comes out of the printer is closer to what you see on the screen.

The package includes a Pantone browser plug-in and tools to allow browsers to accurately display Pantone color-corrected Web pages. Installation is simple: just a drag and drop it to your hard drive. Calibrating your monitor is also easy, as the software gives you step-by-step onscreen instructions.

The calibration process involves adjusting monitor brightness and contrast according to the onscreen instructions; and adjusting onscreen color patches to match the color reference card that is included with the package. The screen to printer results are good, and the screen to screen results are excellent!

MC-P/CoCo & Channel24

From: Pantone Inc.

Tel: 201-935-5500, <http://www.pantone.com>

Platform: Macintosh only

Price: \$449

Anyone who knows Photoshop can easily install these plug-ins by dragging and dropping the icons into their Photoshop application's plug-in folder.

Pantone MC-P/CoCo is a powerful plug-in for Photoshop that enhances color correction, image control and soft-proofing capabilities. It helps make color correction work more efficient and transitions smoother. For example, you can select a range of colors to correct, allowing for more natural transitions of color.

Pantone Channel 24 is another Photoshop plug-in that allows for easy integrations of image files containing up to 24 separate channels of color into the DCS 2.0 files (DCS 2.0 is a multi-channel file format).

These plug-ins are very user friendly and handy, especially if you are a long-time Photoshop user. These two products are also part of a larger Pantone ICISS system, which costs US\$7,600. The full ICISS color separation package includes a calibrated scanner and separation engine.

HexWrench

From: Pantone Inc.

Tel: 201-935-5500, <http://www.pantone.com>

Platform: Macintosh only

Price: \$449

Hexachrome is Pantone's six-color printing model, which is often used when more oomph is required than can be delivered by traditional four-color printing. The addition of orange and green to the cyan, magenta, yellow and black inks that make up nor-

mal printing helps create a more realistic color by printing hues that couldn't be produced from traditional four-color printing.

Pantone HexWrench is a color separation plug-in that allows users to work with hexachrome six-color separations. This is an easy-to-install plug-in for Photoshop. It has windows that allow you to adjust various detail settings. It includes an input media filter, scanner profile selector, and matching style modifier as the input options; monitor profile selector and monitor setup selectors for the display options; and process filter, stock filter, screen filter, printer profile selector, black model modifier and others as the output options.

The plug-in allows you to compare separation settings. For example, one region may be a Hexachrome preview of the image on coated stock, another on uncoated stock, a third a CMYK preview, and the fourth the original RGB image.

Color Web Pro

From: Pantone Inc.

Tel: 201-935-5500, <http://www.pantone.com>

Platform: Macintosh only

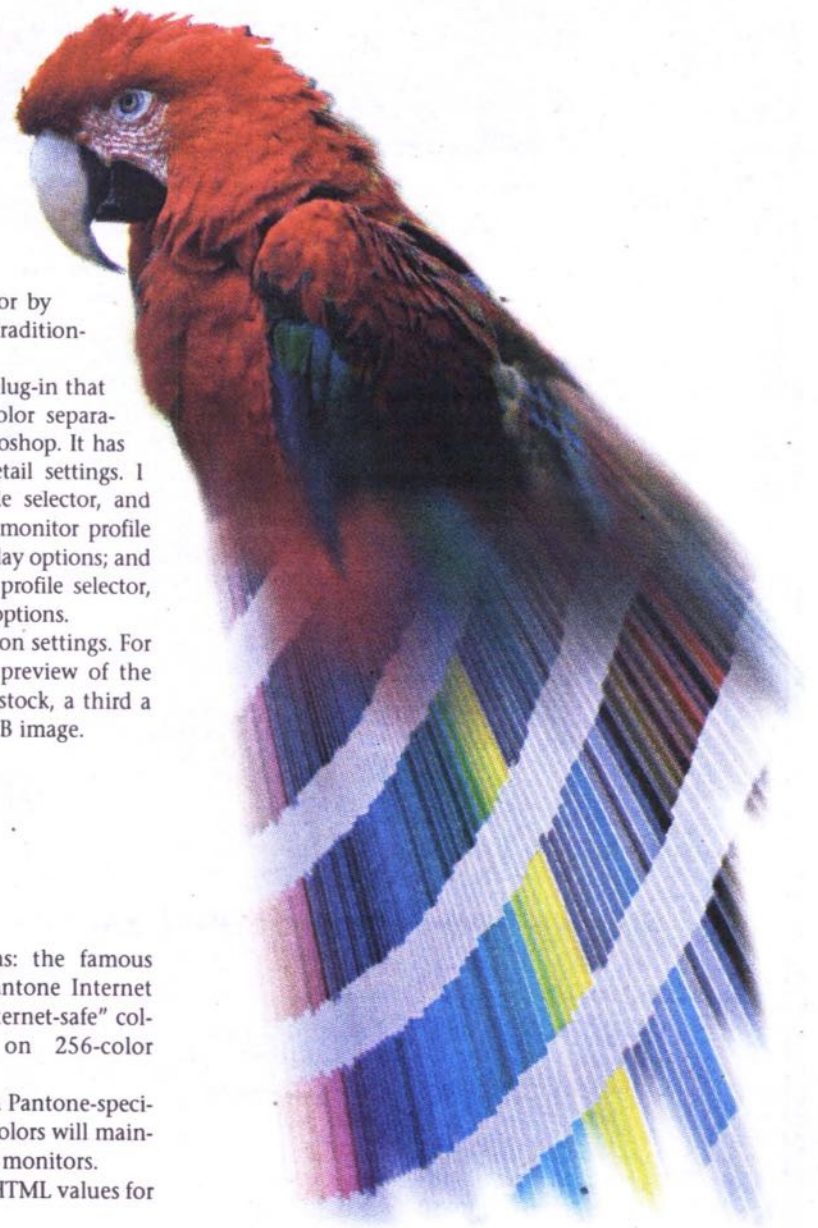
Price: \$79.95

Just out, this product contains two systems: the famous Pantone Matching System (PMS) and the Pantone Internet Color System. The latter specifies the 216 "Internet-safe" colors; i.e., those that will not dither on 256-color monitors.

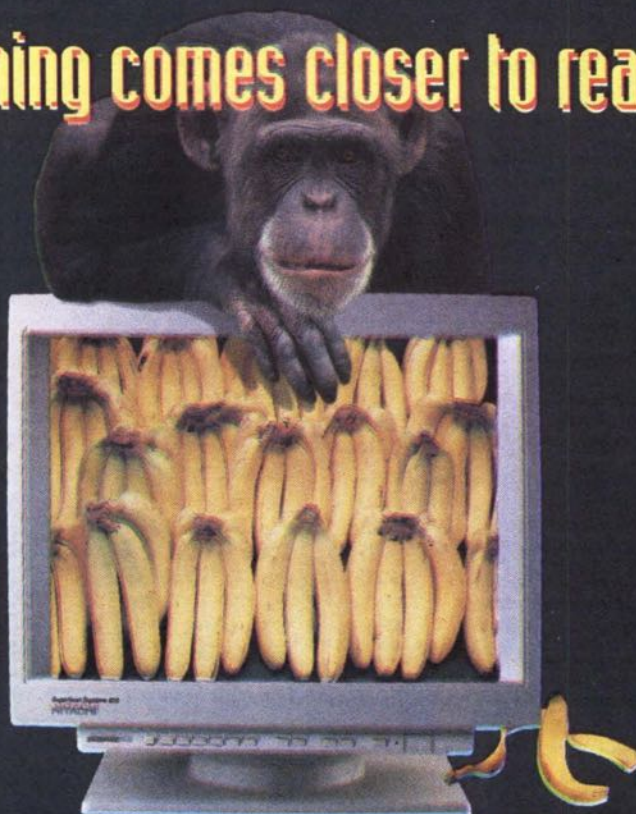
ColorWeb Pro allows the artist to convert a Pantone-specified color to the closest Internet-safe color so colors will maintain their fidelity when viewed on a variety of monitors.

The color charts include RGB, CMYK and HTML values for each color. □

Sherly Ho is a graphic artist who works on *The Computer Paper's* sister publication, *Canadian Computer Wholesaler*.



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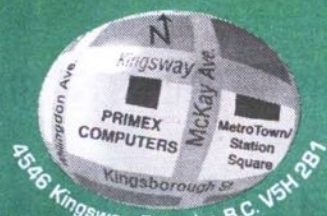
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FROM PAPER TO PIXELS

Publishing on pixels & paper

Continued from page 29

as a sequence of characters: a river of text, whose flow is redirected by margins, indents, and other factors. When an object is placed on the screen, it is in some way being placed within the flow of the text. As a result, changes in the text can sometimes cause the object to unexpectedly change position. Deleting the wrong paragraph could result in the object being taken with it. And this is just the beginning.

This is not to say that a word processor can't be a viable publishing tool. People can—and have—created newsletters, brochures, books, and magazines with them, even during the days of WordPerfect 5.1 for DOS. However, it can sometimes be a little like using a screwdriver as a hammer; it works in pinch, but in the end it's a better idea to get the tool designed for the job at hand.

This is where desktop publishing programs come in. The main advantage of desktop publishing software over a word processor is that you have more control over everything, especially these key items: where you place objects, how you manipulate those objects, and how the final output will be handled. Each object is a separate entity unless you decide to link it in some way to another. The only limits are your imagination and the degree of control you have over a given program's features.

Working the Web

HTML is the underlying language of the World Wide Web. It was originally designed to be simple but elegant, a means of taking ASCII text and adding commands ("tags") for some minor formatting and, most importantly, creating links to other documents. For instance:

```
<B>wascally wabbit</B>
```

in HTML would come out as
wascally wabbit

in a Web browser; the tag activates boldface, and deactivates it. (This should be causing flashbacks for people who have used WordStar and WordPerfect under DOS.)

In some ways, HTML matches the description of word processors I gave above, since any tags—including those for graphics, audio, and video—are incorporated into the flow of the text. Although HTML can be created or edited in any text editor, only patient or picky people (including myself) create Web sites this way. For the less code-inclined, there are several different ways to get up and running on the Web.

One of these ways is to use your favorite word processing or desktop publishing program. Just about all of the major packages now have an HTML option under their Save As or Export commands. Another way is to use a program specifically designed to create Web pages from scratch, shielding you from the HTML itself and allowing you to work visually. In either case, when the HTML file is saved, the program generates the necessary tags and saves any required files (graphics can't be embedded in HTML—it's pure ASCII, remember?) on its own.

This approach works well for some, but not for everyone. Sometimes, a Web page authoring program takes the liberty of reinterpreting what you've created. Any program should take extra spaces out of your text, since the HTML specification doesn't allow for more than one space at a time (on the other hand, if you put a blank line into your page, the program shouldn't decide to make it bigger or smaller or to remove it altogether).

HTML has evolved quite a bit in the last few years, and many designers have discovered their authoring programs haven't kept up

as quickly with new developments. For instance, there was a noticeable delay between the time that tables were introduced to the HTML spec and the time various programs incorporated them. Also, there are additional elements to Web page design, such as scripting and Java applications, that some authoring tools can't handle properly.

As a result, many programs let the user switch to the raw HTML source and edit it directly, just to make those additions or subtle tweaks a page might need (whether or not your authoring program likes your changes is another matter). Perfectionists quickly discover that regardless of the approach, learning a little HTML goes a long way.

Be acrobatic without jumping through hoops

HTML was designed to follow the unwritten Internet credo of usability on any platform; in theory, every up-to-date Web

browser should understand the established HTML standards.

While this is true, the same Web page can still look different on two different browsers, due to minor differences in how the HTML code is interpreted and variations in user settings. On top of this, the browser wars between Microsoft and Netscape have led to slightly incompatible variations on the established HTML specification—ironically, mainly in the area of layout and design.

This has led to many Web page designers tearing their hair out in frustration, since they don't have the level of control they'd like. How can you make your headline or image play off the body text's typeface if you can't control the typeface? Even the best designers can do little more than accept the limitations inherent to HTML and check their pages on different browsers at different settings in order to catch any unexpected glitches.

This is where Adobe's



PageMaker 6.5 not just for paper-based design

PageMaker 6.5

From: Adobe
http://www.adobe.com
Platforms: Windows 95/NT, Mac, PowerMac
Price: \$895

While the learning curve for Adobe's venerable layout program is a bit steep, at least PageMaker will keep up with you as you learn more; it contains just about every nitpicky control that a designer would want. For instance, Microsoft's low-end desktop publishing package, Publisher 97, allows you to control the tracking (spacing between characters) with five settings: Very Loose, Loose, Normal, Tight, and Very Tight. PageMaker has the same options, but you can redefine what the settings mean—for individual fonts and at different sizes.

Don't let that daunt you, though, even if you never look at these or other seemingly arcane settings, you can produce great work with PageMaker. Moreover, unlike Publisher and other low-end packages that eliminate or hide advanced features, all of the advanced functions are accessible in PageMaker, should you ever need them. And this is done without crowding the interface.

The Windows 95 and NT version of

PageMaker is the first specifically designed for the newer operating systems, but it still feels a little like a Macintosh program; among other things, the keyboard shortcuts listed in the menu use the caret (^) to represent the Ctrl key, which suggests some polishing of the interface is still in order. Also, some commands are placed a little oddly (Find is under the Utilities menu instead of Edit).

HTML (hypertext markup language) and PDF (portable document format) export is handled very thoroughly. PageMaker 6.5 is the first version that supports hyperlinks, and these are translated either as internal links (document jumps in HTML, bookmarks in PDF) or external (jumps to other Web pages). The user has extensive control over export options for HTML, including options for preserving the original structure of the document as best as possible through the use of tables, down-sampling graphics for screen resolution, and options for generating multiple HTML files from one document.

There is a similar level of control for PDF, as PageMaker can directly adjust the same settings as Acrobat Distiller (which is included in the package, as well as a "lite" version of Photoshop). As always, the HTML may have to be modified after.—Emru Townsend

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FROM PAPER TO PIXELS

PDF comes in. This format can best be described as the screen version of the PostScript page description language for printers. In its simplest form, creating a PDF file is as easy as printing. Rather than outputting to paper, a PDF file is created, preserving the original document's fonts, structure, and formatting.

PDF files can be viewed with the freely distributable Adobe Acrobat Reader, but creating

the files requires the Adobe Acrobat package. Since a PDF file can be generated from any program capable of printing, the user is free to use his or her program of choice to create the original document. PDF documents can also incorporate hypertext, Web links, audio and video, and more.

Pulling it all together

You may have noticed a trend running

through this article so far: creating something for one medium doesn't preclude the same material being used for another. A document created for paper can be exported to HTML, or reproduced as a PDF. PDF files are often distributed over the Web, which uses HTML. PDF files can have Web links built in. There are probably other combinations that haven't been thought of yet.

One aspect of this is "repurposing," or

taking something created for one purpose and modifying it for another. For example, you could take a print article created with a word processor and generate a Web page from the original file. Another aspect is what marketing people like to call synergy: say, a magazine article that mentions an accompanying Web site, which may contain related PDFs.

The point is, these media still have vast, untapped possibilities, which can be mixed and matched to complement each other. The potential of HTML is still being explored, and the PDF format is constantly being supplemented with utilities from third-party vendors. Even the millenia-old medium of paper continues to hold surprises. If you've got something to say, now is an exciting time to say it. □

Emru Townsend's first publishing venture was a crudely drawn comic book he tried to sell to classmates when he was 11. You can ask him about his other publishing efforts at emru@cam.org.

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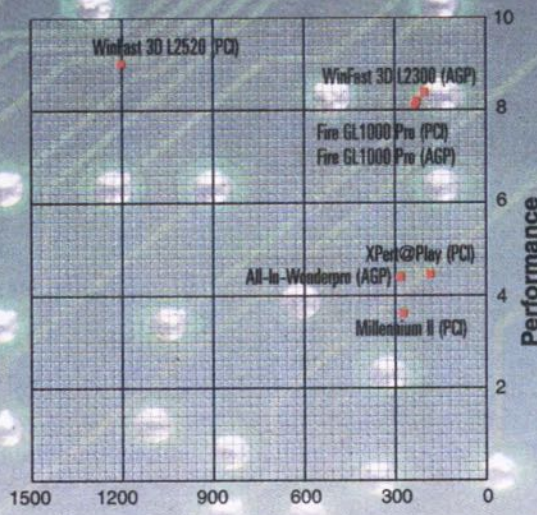
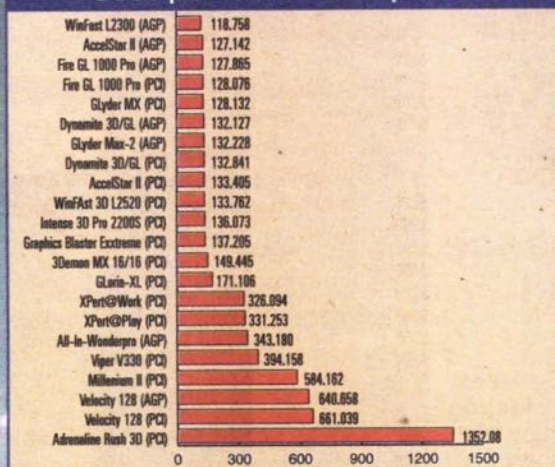
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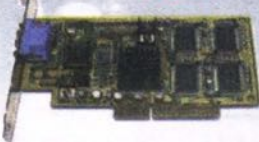
Byte Magazine Lab Report, March, 1998

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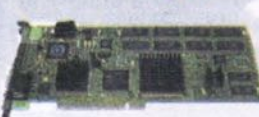


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Netscape Navigator Gold 3.04 Netscape Composer 4.04

From: Netscape Communications

<http://www.netscape.com>

Platforms: Windows 3.1/95/NT, Mac, Power Mac

Price: Free

AOLPress 2.0

From: America Online

<http://www.aolpress.com>

Platforms: Windows 3.1/95/NT, Mac, Power Mac

Price: Free

Creating HTML (hypertext markup language) from scratch requires the ability to visualize graphics and page layout by looking at text peppered with arcane tags as , <HTML>, <BODY BGCOLOR> and
.

Since not everyone has this skill, many rely on graphical HTML editors. Netscape Navigator Gold and Netscape Composer (part of the Netscape Communicator package) both perform the same function: they allow you to create a Web page in an environment that looks just like your browser.

In general, it works well. What you see while working is 95 percent accurate, and you can always flip over to the browser to get the real deal. Some direct HTML adjustment may still be required, though, as Navigator and Communicator occasionally make some decisions for you, such as removing a blank line no matter how emphatically you put it in. If anything, these programs are good for getting the basic structure set up before finessing.

If you're more of a code warrior, you might prefer AOLPress. Like the two Netscape programs, AOLPress combines editing and viewing. The difference is that the AOLPress browser and editor are combined in one window; the editor displays the page exactly as you would see it while browsing. There's also an option to edit HTML directly in another window (which highlights the tags to differentiate from text—a nice touch) without having to invoke another program.—Emru Townsend

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- (SB AWE64 / Gold / PCI Sound.....+\$95/230/80
- (24x /32x CD-ROM+\$80/\$110
- (ViewSonic G771/ P775 / P815.....+\$600/760/1700
- (Sony200ES/200GS/400PS.....+\$720/920/1540

Pentium Pro (P6)

Intel P6-180/200mhz...\$1150/1500

Intel Venus 440FX 2S, IPEIDE, ATX
32M EDO 72pin 60ns
FD 1.44G,
3.2GB eide HD Mode 4
Mystique220 3D 4MB w/MPEG
17" ATX Tower case w/ATX power
Fujitsu 8725 104 win95 keyboard
Logitech mouse w/pad

Intel Dual Pro-180mhz x 2...\$1500

Intel Dual Pro-200mhz x 2...\$2300

(with Dual Pro motherboard and TWO CPUs)

Quantum
• 4.3/6.4 SE...\$280/360
• 4.5/9.1 UW...\$650/980



*"We Pioneered the Past, We Anticipated
the Present, and You can be Sure we're
Working on the Future."*

NETWORKS / UPS

- 16 bit ISA comb Ethernet.....\$28
- 32 bit PCI comb Ethernet.....\$32
- Intel ISA / PCI pro 10+.....\$70/95
- Intel PCI Pro 10/100.....\$95
- 3COM PCI 3C900 comb 10BT.....\$120
- 3COM PCI 3C905 100BT.....\$85
- BNC/Terminator/T.....\$3
- Coax 10ft/20ft/50ft.....\$10/13/25
- cabling tools\$60

- Hub 9port /16port 10BT.....\$90/180
- Hub 100BT 8/12/16port.....\$260/560/1360
- Hub OfficeConnect 3C16700 8P.....\$110
- Hub OfficeConnect 3C16710 8P.....\$530
- 3C16440-12p ..\$370 3C16441-24p..\$580
- 3C16405-40p..\$680 3C16675-48p..\$2850
- Hub 100BT 3C16720 8P.....\$650
- Hub 100BT 3C250B/TX 12port.....\$1400
- Hub D-Link 8port/16port.....\$110/200
- Hub D-Link 16port/24port.....\$230/380

- Novell Users 5 / 10.....\$780/1800
- Novell Users 25/ 50.....\$2320/2880
- NT 4.0 Server 5 /10\$950/1300
- NT 4.0 client access license/each.....\$45
- NT Workstation 4.0 / license.....\$280/ \$60
- MS Backoffice server V2.0/2.5..\$2200/3100
- MS SMS v.1.2 10/25 users.....\$1420/2200
- MS SNA v.3.0 w/S users.....\$1680

- UPS 200/280/400/450.....\$128/145/190/200
- UPS 600/900/1250.....\$280/450/620
- UPSPro280/420/650/1000..\$200/330/400/520
- UPSSmart 450/700/1000.....\$380/490/660
- UPSSmart 1400/2200/3000..\$820/1420/2290
- SurgeArrest Person 7/ w-tel\$25/30
- SurgeArrest Pro 7/ w-tel\$37/47
- SurgeArrest Net 7/ w-tel\$40/55

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PACKARD

Quantum

WESTERN DIGITAL

TOSHIBA

Canon

Seagate

ATI

Robotics

AMD

DIAMOND

intel

Cyrix

EPSON

MATROX

Microsoft

SONY

OKIDATA
• Okipage 4W 600dpi...\$280
• Okidata 6E 600dpi...\$420

Brother
• 730DX\$400
• 760DX\$510

HP
• 692C...\$300
• 6L.....\$510

Advanced VAR dealer HP

- HP full-line color Deskjet
- HP full-line Laser printer
- HP full-line Color Laser printer
- HP full-line Plotter
- HP full-line desktop / laptop computers
- HP Servers
- HP tape /HD /CD /Writers

All listed prices (reflect 3% cash discount), quantities
and specifications are subject to change without notice.

MODEMS

Robotics

Sportster 33.6 int./voice.....	\$100/\$120
Sportster 56k Voice int/ext.....	\$150/250
Motorola 56k Voice int/ext.....	\$125/150
Creative 33.6/56kFlesh voice.....	\$70/\$125
33.6k/56k VoiceFaxMod int.....	\$55/95
3COM-USR 56k Vpc.....	\$220
Ascend P75Router	\$950
(PCMCIA see notebook section)	
Capture card & Camera.....	\$490.0

MOTHERBOARDS

intel. Asus



Intel LT430TX 512k 75-23,MMX,ATX	\$160
Intel AN430TX,512k,233, Sound,ATX	\$235
Intel ATX Venus VS440FX P6 150-200.....	\$140
Intel ATX PR440FX Dual P6,UWscsi	\$555
Intel AL440LX PII AGP /with Sound.....	\$250/280
Tyan Dual P6 / Dual PII ATX	\$330/420
Tyan 430TX AT	\$160
Asus TXP4-430TX AT/ TX97X-ATX.....	\$156/200
Asus P2L97 440LX AGP / with UW-scsi.....	\$225/400
Asus P2L97DS 440LX Dual PII UWscsi ATX.....	\$465
SuperMicro Dual PII 440LX UWscsi P6DLS.....	\$580
GA 430TX 512 MMX AT/ATX	\$140/150
GA 440LX P6LX ATX PII AGP	\$220
ABit 440LX LX6 ATX PII AGP	\$210
TX 512k MMX AT	\$110
Shuttle 569A TX512k,75-233,(83hz).....	\$140

HARD DRIVES

Quantum

Seagate

WESTERN DIGITAL

2.1/3.2G/4.3G.....	\$180/220/265
Quantum ST2.1/3.2G.....	\$225/245
Quantum SE3.2/4.3/6.4/8.4G.....	\$246/285/385/498
WD2.1/3.1G/4.3/6.4.....	\$235/260/295/400
Maxtor UIDE 3.2/4.3/6.4/8.0G.....	\$250/285/390/500
Seagate 2.1/2.5/3.2/4.3/6.4.....	\$240/255/260/310/410
Quantum SCSI 2.1/3.2G.....	\$290/330
Quantum SCSI ST 4.3/6.4.....	\$395/560
Quantum 4.5/9.0 UWscsi.....	\$685/1100
Seagate Barraguda4.3/9 UWscsi.....	\$860/1180
Seagate Shetta 4.3/9 UWscsi.....	\$980/1390
Removable HD kit EIDE/SCSI.....	\$30

DVD kits

Panasonic DVD kit / DVD2 kit.....	\$270/420
Creative DVD Encore kit.....	\$450
Toshiba DVD1 drive / DVD2 drive	\$150/240
Toshiba DVD2 kit.....	\$370
Pioneer DVD2 kit.....	\$330

Sound

Acer16bit /32bit sound card.....	\$22/46
SoundBlaster 16/Awe64.....	\$50/95
AWE 64 Gold (4M).....	\$250
PCI sound card	\$60

CD-ROM

24x ide Acer/Panasonic/Toshiba.....	\$80/ 93/100
32x EIDE Acer / Toshiba	\$110/115
24x scsi / 32x scsi	\$155/180
8x ext parallel / with sound	\$330/420

CD-WRITER

Panasonic 8x/4x SCSI /ctrl/sft kit	\$620
HP 7200i/e eide Rewriter. Retail	\$535/640
Yamaha 4260T scsi 6x4 scsi in/ex	\$670/820
Yamaha 4001t eide in/parallel.....	\$620/670
SONY 928E eide int	\$445
writable cd-disk /Sony	\$2.5/ 3.5
Rewriterble cd-disk /Sony.....	\$24/28

Speakers

80W/160W.....	\$14/\$45
GNT5000 subwoofer kit	\$80
Yamaha M15/Subw MTW5.....	\$90/110
Yamaha M20/Subw MT10	\$95/185
Altec ACS 45/48/55.....	\$110/195/210
Labtec 2412/2612.....	\$115/190
McioPhone/Headset.....	\$8/8

Titles (with CD-ROM kit or system only)

Encarta '98 home bundle.....	\$80
Corel WP Suit 8	\$90
10 cds with hadreds titles	\$10
MS Office Pro 97 cd	\$320
MS small business pack	\$290

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Monthly News !!

- Intel released PII-233 CPU
- Lexmark Printer gives end-users rebate
- Toshiba released new notebooks
- All brands of Notebooks dropped down...
- Monitor 3D / V330 AGP / Canopus / Millennium are kept in stock

CPU

intel.

AMD

Intel P5 150 /166	\$140/\$160
Intel MMX 166/200/233	\$160/200/320
Intel P6 180/200.....	\$255/660
Intel PentiumII-233/ 266.....	\$425/580
Intel Pentium II 300/ 333 mhz.....	\$750/1060
AMD K5 100/133/166	\$85/95/125
AMD K6 MMX166 / 200 /233.....	\$155/195/295
Cyrix 6xMX166/200/233.....	\$110/145/280
C MMX 180Mhz	\$130
CPU fan : Pentium / PII /Pro	\$10/20/18
Monitoring fan	\$40

VIDEO CARDS

CL 5446 1M / 2M PCI.....	\$26/38
S3 Virge 3D 2M /4M PCI.....	\$48 /65
ATI 3D 2M / 4M PCI.....	\$69/95
ATI 3D PC2TV 2M/4M PCI.....	\$110/140
ATI ProTurbo PC2TV 4/8 PCI.....	\$170/230
ATI Xpert 3D 2M / 4M PCI.....	\$95/145
ATI Xpert@works 2M/4M PCI.....	\$160/195
ATI Xpert@play 4M/8M PCI.....	\$220/305
ATI xpt@play 4/8M AGP.....	\$240/320
ATI TV Tuner	\$110
#9 Resolution 4/8M AGP.....	\$270/385
Mystique220 4M PCI oem / Retail.....	\$135/145
Millennium-II 4M / 8M PCI oem.....	\$210/315
Millennium-II 4M /8M PCI retail	\$235/365
Rainbow Runner TV / Studio	\$105/240
Matrox M3D add-on 3D	\$120
Millennium-II 4M/8M AGP	\$240/345
Monster 3D 4M oem / retail.....	\$218/248
Diamond V330 4M PCI / AGP.....	\$225/225
Diamond GL 1000Pro 4M/8M AGP.....	\$220/295
Stealth-II S220 4M PCI (oem/retail).....	\$145/165
Stingray 128 with 6M / 8M PCI.....	\$280/350
Canopus Pure3D 6M / Total3D 128v.....	\$250/web
Insense Voodoo 4M PCI	\$280
CL 3D 4M AGP	\$95
3Dfx voodoo-2 cards	(check ATIC web news)

SCANNERS

HP 5S/5P/6100C.....	\$160/350/935
Microtek E3/E6/ E6pro.....	\$195/385/650
UMax 610P/ 610S	\$180/190
UMax 1200S /1200S Pro	\$360/\$670
Parallel clor flat bed sanner	\$155

ZIP / TAPES

HP T3000 / ext 3.2G Traven.....	\$210/315
HP T4000 / ext. 4G-8G Traven.....	\$410/510
HP T5000 / ext 2.5G-5G	\$280/385
Seagate 3200 3.2G Traven int/ext	\$230/275
Seagate DAT 4-8G 4mm int. / ext	\$1060/1220
SONY DAT 5000i 4mm 4G-8G drive	\$1250
ZIP 100M int eide /parallel.....	\$150/195
Zip 100M scsi int/ext.....	\$180/198
Zip Plus scsi int. / parallel.....	\$249/250
JAZ 1GB scsi int/ ext	\$380/495
JAZ 2G scsi int/ext	\$760/880
Zip disk / Jaz disk	\$15/113
JAZ traveller SCSI to Parallel adapter.....	\$65
SyJet 1.5 scsi int/para. / scsi ext.....	\$375/380/380
SyJet 1.5 disk	\$98
Traven TR1/TR3/TR4.....	\$30/40/45

CAMERA/CAPTURE

Miro DC30 plus Capture.....	\$1230
Kodak DC50 / 120 Camera.....	\$590/1050
USR Video Fun kit.....	\$329
USR BigPicture kit	\$499
Video Capture card and TV Tuner	\$95
Color Camera for com port	\$180

RAM

72pin 4 / 8 / 16M. EDO.....	\$19/30/40
72pin 32 / 64M /128M EDO.....	\$80/180/430
Parity 72pin 4 / 8 /16M.....	\$30/50/70
Parity 72pin 32 / 64M.....	\$110/260
30pin 1M / 4M	\$6 /19
SDRAM (10ns) 16/32M	\$48/80
SDRAM (10ns) 64/128M.....	\$180/410
SDRAM (10ns) 64 8x8.....	\$245
SDRAM-SPD 32M/64M.....	\$85/275
ECC DIMM 32 / 64M.....	\$110 /280
ECC DIMM 128M	\$640
SDRAM-ECC(10ns) 16/32M.....	\$80/140
MAC DIMM 16M/32M.....	\$70/100
SOJ Video RAM 512k/1M.....	\$5/\$10
RAMs for Notebooks.....	available
RAMs for printers	available

MONITORS

SVGA 14"/15"/17".....	\$190/245/470
Daytek 1726 26 17" 1280.....	\$550
Acer 15"/17"(76ie/78ie).....	\$308/565/670
MAG D500T /D700T.....	\$430/790
NEC A500/M500/E500.....	\$425/510/495
NEC A700/E700/M700.....	\$730/890/970
NEC P750 17" / P1150 21" 25.....	\$1030/1650
Sony 100ES/GS/PS (15").....	\$450/520/580
Sony 200ES/GS/PS (17").....	\$760/920/1100
Sony 400PS (19") 500PS (21").....	\$1550/2350
ADI 4P(15") /5P(17") / 5P+.....	\$350/585/620
ADI 6P(20")	\$1050
Sumsang 500B/700P.....	\$460/930
Viewsonic15GS/G771/G773.....	\$410/630/660
Optique V773/V775	\$585/680
Viewsonic GT775/P775/PT775.....	\$830/780/930
V95/ G790 (19")	\$1040/1100
Viewsonic PT810/P815.....	\$1530/1730
Mitsubishi 87TX 17" /91TX 21".....	\$1020/1960

PRINTERS

HP HEWLETT PACKARD	
HP 670C/692C/722C.....	\$280/330/440
HP 890C/1000C.....	\$540/650
HP 6L / 6P /6MP.....	\$515/950/1240
HP 4000 /4000N /4000NT.....	\$1470/1870/2090
HP Color 5 / Color 5M.....	\$5280/8890
HP 4V /5S.....	\$2370/3490
HP Color Plotter ..your sale centre in Vancouver	
Accessory for HP	in stock
Canon	
Canon BJC250 (win only) / 4300.....	\$190/270
Canon BJC4550 (11"x17").....	\$550
Canon BJC80 Portable	\$380
Epson	
Stylus 400 (720dpi, WIn only)	\$270
Stylus 600 / 800 (1440dpi).....	\$340/475
PhotoStylus printer 720x720.....	\$505

Brother

Brother HL730DX / 760DX.....	\$390/490
Brother HL730DX+ / 760DX+.....	\$430/530
Brother HL1060/1660.....	\$750/1320
Brother MFC 4550/MFC 6550	\$1320/1130
Brother toner TN100 / TN200	\$30.

Lexmark

Lexmark 1000 / 7000 ..end-user rebate \$40/50	
Lexmark 7200/7200V.....end-user rebate \$50	
Lexmark Optra S1250/1250N.....	\$1390/1850
Lexmark Optra S1620/1620N.....	\$1370/1800
Lexmark Optra S1650/1650N.....	\$1590/2050
Lexmark Optra S2420/2420N.....	\$2760/3260

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All prices listed reflect cash discount & are subject to change without notice!!!

Notebooks

NetBook™ (v.2 Special)

A200MMX/32m2.1G/12.1"TFT/20x/33.6	\$2690
A233MMX/64M/3.1G/12.1"TFT/20x/56k	\$3290
A233MMX/32m2.1G/14.1"TFT/20x/33.6	\$3990
A233MMX/64m/3.1G/14.1"TFT/20x/56k	\$4590

Toshiba

300CDS • P166MMX/16M/2.1G/12.1" DS/16x	\$2280
310CDS • P200MMX/32M/2.1G/12.1" DS/16x	\$2900
440CDX • P133MMX/16M/1.3G/12.1" DS/10x	\$1750
440CDT • P133MMX/16M/1.3G/12.1" TFT/10x	\$2350
460CDX • P166MMX/32M/2.0G/12.1" DS/10x	\$2420
470CDT • P200MMX/32M/2.1G/12.1" T/10x/33.6	\$4000
550CDT • P266MMX/32M/4.0G/10.4" T/20x/K56	\$5300
320CTI4.0 P266MMX/32M/4.0G/10.4" TFT	\$4995
750CDT • P233MMX/64M/5G/13.3" T/DVD/33.6	\$7290

IBM ThinkPad

TP380ED • P166MMX/16M/2.1G/12.1"TFT/20x	\$2300
TP770 P233MX/32M/4G/13.3TFT/W95	\$5890
TP770.P233MX/32M/5.1G/14.1"TFT/W95	\$6990

HITACHI

VB+ • P166MMX/16M/1.4G/12.1"/10x33.6/TFT	\$2700
VBPro P166MX/32M/2.1G/12.1"/10x56k/TFT	\$3800
VBPro P233MX/32M/3.2G/13.3"/20x56k/TFT	\$5500

Panasonic

Notebook Accessories

• Notebook Memory

For IBM/Toshiba/ 8M/16M	\$100/160
For Hitachi 16M/32M	\$120/190

• Modems and EtherNet (PCMCIA)

Motorola 33.6 modem PCMCIA	\$190
Motorola 33.6 FM and 10BT	\$320
Megahertz XJ3336T 33.6kFm/10BT	\$350
Megahertz XJ1556 Modem	\$350
33.6K/56K Pcmcia faxmodem	\$110/180
PCMCIA 10BT Ethernet	\$140
Xirecom 10BT PCMCIA	\$230
Xirecom 10BT + 33.6 faxmodem	\$350
Xirecom 100BT	\$195
Xirecom 100BT + 56k faxmodem	\$440
3Com 3C589D-TP PCMCIA	\$180
3Com 3C589D-Comb PCMCIA	\$240
3Com 3C562D-TP w/33.6 modem	\$380
Intel 100BT PCMCIA	\$210

• Batteries, Sound Cards, Backup,SCSI

Adaptec 1450/1460/1480 scsi	\$140/230/280
ext parallel CD-ROM 8x / with sound	\$360/430
NewMedia sound / game port	\$260/80
Carrying case \$40/90 Battery Ni/Li.....	\$180/250

CASE / KB / MOUSE / SCSI

SCSI 1520 /1522	\$90/96
PCI SCSI 2910/2920	\$85/185
PCI SCSI 2940 /2940UW.....	\$210/260
PCI SCSI 3940 2-channel UW.....	\$420
PCI AAA131/133 scsi raid.....	\$790/1280
Scsi cable/ Wide scsi cable.....	\$20/10
over 4 devices cable	\$40
Rock mounting IDE/SCSI drawer.....	\$25/30
Printer cables 6ft /10ft/25ft.....	\$5/10/30
Modem cables/Laplink cables.....	\$10/15
Mouse/Logitech 2B / 3B.....	\$8/12/18
Logitech MouseMan3B /MS V2.1A.....	\$32
MS IntelliMouse w/wheel PS/2 or Serial.....	\$60
Logitech Marble mouse/MS BUS	\$120/95
Logitech cordless mouse.....	\$125
AT 13"/15"/19"/23" case&power.....	\$33/40/55/100
ATX 17"/19"/23" case &power.....	\$95/120
104KB/Fujitsu8725/4725	\$18/25/55
MS Natural /TouchPad KB	\$70/70

CorelDraw 7 / WinFaxPro v.8.....	\$350/138
AntiVirus Norton/MaCafee.....	\$65/60
Partition Magic V.3 / Norton Utilities.....	\$85/100
Netcape Com-cator v.4 /FrontPage'98.....	\$120/180
Simply Speaking Gold / Simply Accounting.....	\$149

 NEWS

Latest wireless technology tested at Nagano Olympics • NAGANO, Japan (NB)—The athletes weren't the only ones attracting attention at the Nagano Olympics. Games officials speaking into their wristwatches caused spectators to stare. The officials were using the latest in mobile communications technology—wristwatch telephones that are the smallest yet developed and in use on Japan's PHS (personal handyphone system) network.

PHS is a lower powered version of conventional cellular telephony and has just over six million users throughout Japan. The handsets are usually smaller than cellular telephones. They also have lower power requirements,



which allows designers to use smaller parts. The model seen in Nagano was developed by researchers at Nippon Telegraph and

Telephone (NTT) who are researching "wearable" communications devices.

The new telephone weighs 45 g, and the battery will power the telephone for 100 hours in standby, or provide 60 minutes of talk-time. To get around the problem of fitting all the keys onto such a tiny phone, NTT designed a voice recognition system. Users can say the digits of a telephone number or say a pre-entered phrase to dial a number in the phone's memory.

A speaker and microphone on the front of the telephone complete the device, enabling the user, and anyone nearby, to hear the conversation. For times when more privacy is

required, a socket allows for connection of a headset and microphone. In this area too, NTT is also testing a new innovation. It's new MiMiE is an earphone type headphone and microphone all in one.

It has a built-in speaker to deliver sound to the ear just like any other headphone, but two small microphones make the unit special. One picks up the users voice via the air and the other via facial bones. Using these two signals, a filter is able to cancel out much of the background noise, making it suitable for use in noisy places. Both microphones are mounted alongside the ear piece, so nothing has to be placed in front of the user's face.

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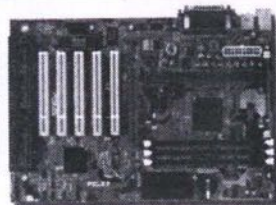
AE ELECTRONICS

138-2981 Simpson Rd, Richmond, BC Canada, V6X 2R2

Tel: (604) 279-8867



MOTHERBOARDS CPU



Asus MMX Pentium MB w/512K cache SP97/TX97	\$135/225
Asus P2L97 PII (LX440) AGP / P2L97 DS AGP	\$275/525
Intel Pentium II 233/266/300/333MHz	\$445/600/790/1180
Intel Pentium MMX 166/200/233	\$168/195/298
AMD K6-166/K6-200/K6-233MHz	\$179/210/249
72 Pin EDO RAM 8/16/32/64MB	\$30/50/90/300
168pin SDRAM 16/32/64MB	\$50/85/240

MONITOR VIDEO CARD

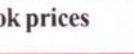
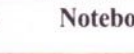
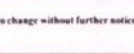
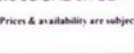
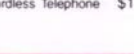
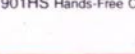
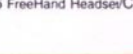
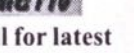
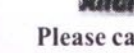
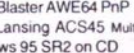
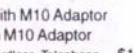
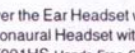
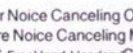
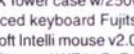
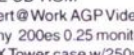
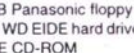
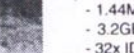
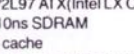
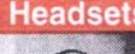
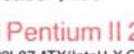
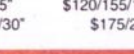
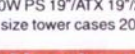
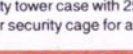
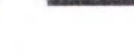
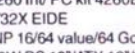
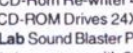
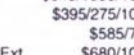
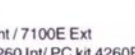
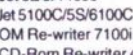
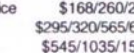
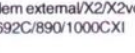
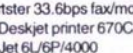
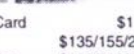
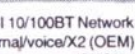
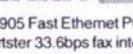
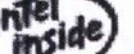
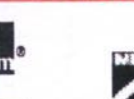
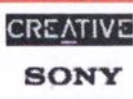


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FROM PAPER TO PIXELS

XML harbors richer data for the Web

BY JACQUES SURVEYER

XML 1.0 has just been approved by the World Wide Web Consortium (also known as W3C, the primary standards body for HTML and the Internet) as a recommended standard, with the support of normally bitter rivals such as Sun, Netscape, and Microsoft. XML (extensible markup language) is a subset of SGML (standard generalized markup language), which allows HTML tags to be extended for support of richer datatypes and functions in Web browsers.

XML's approval will have almost immediate impact on the Net as XML capability is built into Internet Explorer 4.0, and with XML-based products available from vendors such as Arbortext, Chrystal, POET, and SoftQuad. SoftQuad, for example, provides XML extensions to its HoTMetaL Pro 4 Web authoring tool such that database information can be displayed using HTML/XML without having to use elaborate scripting or Java programming.

Already in beta, Netscape Communicator 5 will use RDF, a standard subset of XML to help users organize all their data by integrating content from Web sites and channels, email and bookmarks, and legacy databases with information stored locally on the user's desktop PC. XML/RDF will solve the complex problem of managing information across multiple yet incompatible file formats. XML/RDF will replace previously existing but more narrowly focused formats in applications such as indexing Internet or Intranet sites, site maps, content rating systems, push channel definitions, digital signatures, etc.

But XML's influence will not be confined to the Net. XML, with its user definable tags, provides information about information; i.e., the schema or outline for any structured data contained in a document. Thus Corel, Lotus and Microsoft are all at work converting their office suites to store word processing, spreadsheet, and presentation files using XML tags.

Initially, XML format may be offered as an alternate storage format, but the direction is towards XML format. And the reasons are simple: XML provides both a means of describing the data, and a way to access it. This is a boon because it not only provides standard means of indexing the content of any XML format file for search engines, but also expedites standard and highly reliable interchange of information stored in XML-formatted files.

The office suite vendors, tired of the hassle of maintaining literally dozens of file conversion programs, welcome the standard. Indeed a number of software vendors are hard at work providing programs that convert existing spreadsheet, word processing and other files into XML-formatted files so they can be displayed on the Net, and be used in Web pages.

Finally, this is the first version of the XML. The extension, XML 2, is already going

through the W3C standards approval process. XSL (extensible stylesheet language) extends the formatting capabilities of Dynamic HTML's CSS (cascading style sheets) with new functionality and the ability to manipulate

XML files. XLL (extensible linking language) extends and strengthens HTML's anchors and hyperlinks for use with XML formatted files. Given the broad support of more than 40 software vendors for XML 1, version 2 should

start to take shape by mid summer. In the meantime, HTML users will find a world of functionality available to them in XML, especially with the flood of development books and tools already arriving on the scene. □

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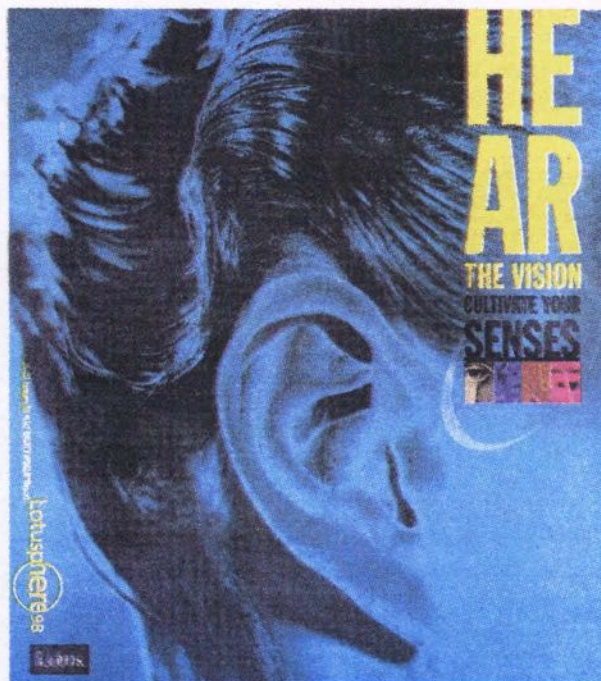
A renewed Lotus bullish on its future

BY GEOFF WHEELWRIGHT

It's strange to go to a conference that is hosted in one of the most unreal places on Earth. It's probably no mistake that Lotusphere, the annual user conference that Lotus Development Corporation hosts for its customers, analysts and the press, is now held annually at Walt Disney World in Orlando, Florida.

After all, Lotus' parent company, IBM, is one of the few companies on the planet that can "live in its own world" when it comes to looking at the global software market. It can plot its strategy without worrying about being quickly steam-rollered by Microsoft. In the part of the business that Lotus and IBM really care about—the Lotus Notes and Domino server products—Lotus is doing extremely well. It's no Mickey Mouse operation and it's certainly not about to become extinct just because Microsoft has become more aggressive in going after the global messaging market.

That's not a position that many software companies find themselves in these days. In almost every case, anyone competing with Microsoft in a vaguely direct manner finds themselves failing valiantly (e.g. Canada's Corel Corporation and its troubled WordPerfect Office product line). Otherwise, they tend to be acquired (as has been the case with dozens of other



would-be Microsoft competitors).

Admittedly, Lotus itself has been victim to Microsoft in the desktop suite and spreadsheet applications markets as current sales of Lotus 1-2-3 and Lotus SmartSuite are now only a shadow of their former selves. But Lotus, IBM—and a hardy band of 9,000 Lotus users—seem to have gotten over all of that and demonstrated a sense of confidence that was encouraging to see.

The company appears to be saying that SmartSuite is the past (although the company will still sell and support it) and Lotus Notes, Domino and the recently released eSuite are the future. Lotus also seemed pretty bullish on that future when it announced on the first day of the conference that the number of "seats" for Lotus Notes (i.e., computers using the product) now exceeded 20 million, with much of the sales coming during the past year. The company said it sold nearly as many Notes seats in the fourth quarter of 1997 as it did in all of 1996. It further claims that its total installed base of messaging seats (including the original Lotus cc:Mail product) now exceeds 40 million and that this is more than double those of the closest competitor.

"We still dominate messaging, and in fact, we gained share again in the face of Microsoft in 1997," boasted Lotus president and chief executive officer Jeff Papows. "We actually exited the year up three percentage points with a 24 percent share position worldwide."

Continued on page 57

Lotus e-Suite offers Java-based apps

BY GEOFF WHEELWRIGHT

The Java-based suite has returned, and this time it looks like it just might work. Little more than a year after Corel Corporation abandoned its plans to market a version of its WordPerfect Office suite (based on the Java programming language), Lotus Development has stepped into the fray.

In doing so, it seems likely the Network Computer (NC) market may finally have seen the birth of its first "killer application" as Lotus announced that it was shipping the first widely available, commercial, integrated office software suite that runs in Sun Microsystems' Java operating environment.

Known as eSuite Workplace, it entered manufacturing in January and was expected to ship shortly thereafter on the IBM's Network Station Series1000 NC system. Lotus' eSuite Workplace offers electronic mail, Web browsing and a set of relatively compact business productivity applications.

At the same time, Lotus announced that preview code of the eSuite DevPack, a set of Java-based applets that should allow corporate users of eSuite to build interactive Internet applications, was immediately available as a free download

from the Lotus eSuite Web site (<http://esuite.lotus.com>).

Built in Java, Lotus eSuite Workplace applets include a word processor, email, spreadsheet, calendar, address book and presentation graphics. Lotus claims they are small, fast, and modular, and load quickly on demand from a server. The company further boasts that they could be appropriate for a "broad class of users" who need access to "focused desktop computing tools," but do not require the comprehensive functionality of a traditional office suite such as Microsoft Office or Lotus SmartSuite.

Perhaps even more importantly, eSuite Workplace allows access to existing enterprise applications and is built to coexist in enterprise environments that include traditional office suites. Lotus further claims that eSuite Workplace will enable enterprises to reduce their computing costs and increase end-user productivity.

Lotus says eSuite Workplace also provides information technology managers with a desktop solution that is centrally deployed and maintained, thereby "minimizing the high training, deployment and maintenance costs" associated with traditional desktop computing solutions.

For companies that want to move into the provision of services that exploit Java as a platform, this has potentially huge implications. And Lotus is working hard with parent company IBM to educate customers on the extent to which eSuite can be used to create Java-based corporate applications. At Lotusphere, it even had a few early customers ready to sing songs of praise about the software.

Lotus says it is undertaking a "comprehensive program to educate developers" on how to build interactive Web applications with eSuite DevPack. The program will apparently include training workshops worldwide, broad distribution of sample code, the publication of a developers' guide and participation in Java developers conferences.

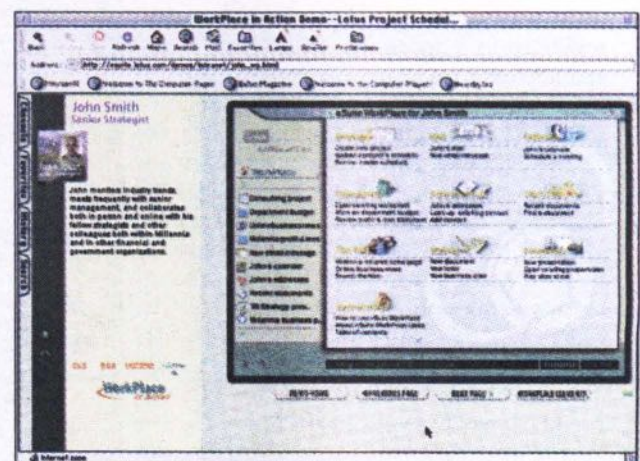
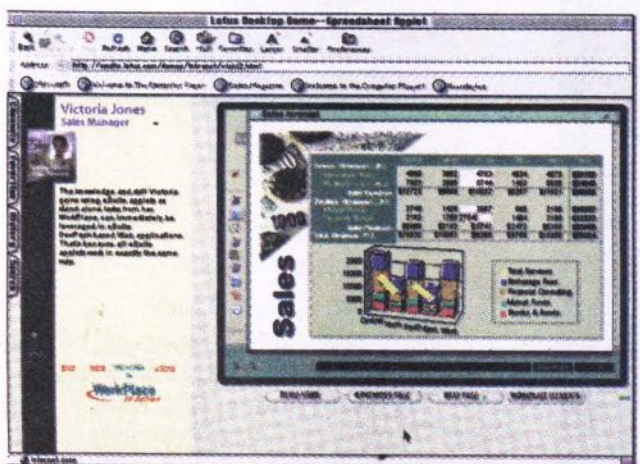
None of this comes for free. Lotus says eSuite Workplace is expected to be available in additional languages for PCs and additional NCs in the second quarter of 1998. It is being offered at an estimated introductory price of \$49 per user (through the company's volume pricing program, Lotus Passport), while the Lotus eSuite DevPack preview is currently available for download in 22 different language versions at no cost from the Lotus eSuite Web site.

Lotus further pledges that eSuite DevPack should be available in those same languages later in the first quarter of 1998 for an estimated price of \$1,495 per single processor through

the Lotus Passport program. All eSuite licences will be sold with a subscription that includes product updates and access to an online, monitored administrators' forum.

The real key to the significance of the eSuite offering, however, is that it makes your operating system and computer hardware platform irrelevant. As long as your systems can run a Java-compatible browser—be it a Sun Microsystems's workstation, a Windows 95-based personal computer with an Intel Pentium processor or an Apple Macintosh—it can run eSuite.

And eSuite is not simply a cut-down or revamped version



of the Lotus SmartSuite that Lotus Development has long offered for Windows 95 systems. It is a "fresh from the ground up" Java-based suite that it is aimed squarely at enterprise local area and wide area networks (LANs and WANs) and intranets. Perhaps even more importantly, it has the backing of parent company IBM (which has demonstrated its commitment by planning to ship eSuite with its NetStation systems), and integrates well with the popular Lotus Notes corporate communications environment and the Lotus Domino server software.

In short, if there were ever a team that was likely to succeed in championing the Network Computer, it would appear that IBM and Lotus are it. IBM is fast becoming the dominant player in sales of Network Computer hardware, while Lotus has just shown that it still has the power to make a difference in the software market with the development of products such as eSuite and Domino. Time will tell whether corporate computer users and buyers agree. □

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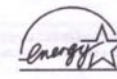
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Correction notice: In the March 1998 advertisement for Voxon Monitors (page 72), Startek Computer Inc. incorrectly stated that the Voxon 20" monitors cost \$549.00 rather than the actual price of \$999.00. Startek Computer Inc. regrets any misunderstandings or problems caused because of this typographical error.

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Microsoft SMS v1.2 (25)	SMC 8416BT ISA EtherEZ Combo
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 NEWS

Renewed Lotus bullish on its future

Continued from page 54



Lotus president and CEO Jeff Papows

From Maui to Notes R5

For most Lotus users, however, the biggest point of interest was in new versions of Lotus Notes and the Domino server software—along with tools and applications to make the most of them (such as eSuite).

For Notes users, the most important product announcement

was the unveiling of Notes Release 5 (Notes R5) "client" software, formerly code-named Maui.

Lotus says this desktop client software (which is typically used to access data held on Notes and/or Domino servers) combines existing Lotus applications such as Internet email, calendar and scheduling, personal document management, news groups, browsing and native HTML authoring into a single integrated Internet client. This means that it is capable of accessing Lotus Notes and Domino servers as well as any standards-based Internet server.

The central advantage of this approach, according to Lotus, is that users won't have to switch between a whole variety of independent applications to work with different kinds of data. Using Notes R5, they'll be able to have a single view of all these data types and applications.

"Notes R5 mirrors the way professionals at organizations of all sizes need to work today, with all of their most mission-critical applications easily accessible from one place for maximum productivity and performance," explained Papows.

Other goodies in the new version of Notes include a Headlines Page, where you can customize Notes to provide you with summaries of what you most need to see immediately when you start up Notes. The content for the headlines can be from your electronic in-box, a Web site, a newsgroup or any other data source you can reach.

Lotus envisions, for example, that some users may want to filter all email from their manager, monitor competitors' Web sites or view a list of important meetings and urgent tasks for the day, on this headlines page. No one should be under the impression that Lotus has any interest in reinventing the browser, however. At a press conference during Lotusphere, the company made it very clear Lotus didn't want to be competing directly with either Netscape Navigator or Microsoft Internet Explorer.

While Notes R5 will include its own browsing capabilities, it will also provide the ability to use Microsoft Internet Explorer or Netscape Navigator for browsing, according to Lotus. In addition, Lotus has built-in links to desktop applications (including both Lotus SmartSuite and Microsoft Office) from within Notes R5.

Finally, Lotus has also added support that will allow users to access their Notes data from a Web browser—and still see their up-to-date headlines, email, calendar, scheduling and other applications. Lotus committed to making sure that Notes R5 will let mobile users log into Notes from an Internet access kiosk or colleague's computer and automatically have access to their own personal settings, includ-

ing their headlines page and other user-specific attributes.


More tools

New development tools were also on offer from Lotus, including some useful products aimed straight at the Internet/intranet market. Leading the charge is Domino Designer 5.0, which Lotus promises will be open to a wider range of tools, and industry-standard

scripting languages and technologies, such as ECMA-compliant JavaScript and HTML 4.0.





Lotus says it has beefed up Java in this release by transforming Domino design elements into Java applets. Lotus' communications product division senior vice-president Eileen Rudden suggests this—and developer initiatives around eSuite—will enable developers to use third-party development tools to write applications and create agents.

"Application developers have always been important to Lotus Development. Our focus on their needs has resulted in 30 percent growth in 1997 of the Notes Designer installed base to more than one million seats," said Rudden. "With our enhanced Domino development environment, Business Partner initiatives, and solutions including Domino Designer, eSuite DevPack and Domino Instant! Host Software Continued on page 62



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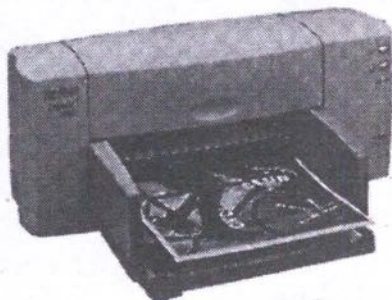
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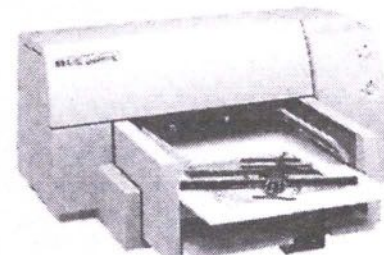
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FROM PAPER TO PIXELS

Writing for the Web

When you're writing for the Internet, pretend you're giving your readers a Twinkie—keep your offering short and sweet, and symmetric.

BY WENDY BOULDING

"There are people who will gauge your intelligence by your script and we wouldn't want to mislead them, would we?" someone named Andrew once pointed this out in a scathing email after he had found a spelling mistake and a typo on one of my Web pages.

Andrew is right. When people come to your Web site, they will decide instantly just how seriously they should take you. They will make this decision as much on the quality of your writing as on your graphic design. Let your thoughts and ideas be as unique as you are, but make sure your writing form is meticulous.

Give them something pleasing to the mind and pleasing to the eye.

I want to tell you something...

Your words may reach millions of people. Chances are, each one of them will appreciate being addressed as though what they are reading has been written especially for them. Write in the same way you would speak to a good friend. Be casual. Be direct. Be captivating.

- Try and be as descriptive as possible. Paint a clear picture upfront for your readers so they know immediately what you are presenting to them.
- Use active, rather than passive voice your readers. For example, "You've seen the headlines..." is more personable and grabs more attention than "Recent headlines have shown..."
- Get to the point. Impatience seems to be heightened while on the Internet. Your reader does not want to scroll through screen after screen to get the important information. Know what you have to say and don't bury it under useless detail.

Hors d'oeuvres anyone?

Haven't you noticed that you spend more time skimming than reading while you are on the Web? Your readers are no different. Offer your words in bite-sized morsels that will haunt your readers even after they leave your site.

- **The shorter the better:** I recommend trying to keep sentences less than 25 words when possible. Keep paragraphs short as well. Six to eight sentences or shorter should sustain your readers attention. When you're taking a knife to text, don't change your original message, but do use the fewest of words possible.
- **Organize well:** After you've done the

writing, do some creative rearranging. Divide your information into logical clusters with each grouping of notes focusing on one specific topic. Be kind to your readers and let them decide what they want to read and what they want to skip over.

- **Give the ending away first:** Put the most important data at the beginning. Follow that with details that clarify your original point. Take advantage of knowing that your reader will concentrate on the first three sentences of your writing. Make an impact right off the top.

Headlines

Readers may come to your site looking for something specific. They will glance over the text looking for keywords, sentences, and paragraphs they are most interested in. They may also ignore the other messages you are presenting. Headlines are beneficial to everyone. With a headline you can direct a reader to the information they are looking for. You can use creative headlines to draw them into passages of information they may have otherwise passed by.

- **Use keywords:** They will not only lure the reader to the text, they will also give a definite insight into what follows. Keywords can also be riveting words that will make your reader stop.
- **Be imaginative:** Being clever and witty is just as effective as being precise. Pique your reader's curiosity by teasing them and gently convincing them to spend more time reading your words.

Finishing touches

You've written your text. You've arranged the information in order of importance. You've come up with amazing headlines to catch your reader's eye. Now, before you put it into HTML (hypertext markup language) format, you have to check, check, and re-check for mistakes.

- You don't have to be a Nobel-prize winning author. You do have to pay attention to details. Check your spelling first. Then read your text for any grammar mistakes or use the grammar-helper function in your word processor.

I recommend putting your writing aside for awhile, and reading it through later. On the second reading, pay particular attention to any grammatical mistakes missed and any typos you didn't see before. A spell checker won't point out when "us" is really supposed to be "is."

The esthetics of text

Text presentation on your Web site is like your body odor. If people like it they'll come closer. If they don't, they'll run away fast.

You want people to read your words. You want them to pay attention to what you have to offer. And they will, if you give them a feast of information in a style that their eyes can easily digest and their minds can appreciate.

If you were in their shoes

The essential key to superb text presentation

is empathy. Put yourself in the shoes of your potential visitors. Consider the browser type they may be using. Think about the speed of their modem. Think about the easiest and most convenient way they will be able to access your offerings in a short amount of time. Don't assume that the technology that sits on your desktop is being used all over the world. Be prepared to design for all people and all their needs.

Take time to plan

After you've written and edited your text, divide it into segments. Every topic, concept, suggestion, and/or instruction should be placed in separate paragraphs. Keep your paragraphs short.

- **Write headlines:** Remember, headlines are like traffic signs directing your visitor from place to place. Make them descriptive and meaningful.
- **Consider using lists and tables:** Putting your ideas into point form breaks up the monotony of reading paragraph after paragraph. Important information is also easier to grasp in this visual form. From a design perspective, it makes a long passage look less daunting.
- **Decide what will go where:** While your text is still in your word processor, pick out the most important information that will go on to the Web page your readers will be exposed to first. Then sort out the remaining text and determine how each section will be placed on separate Web pages.

Seeing is believing

Keep in mind that people on the Internet don't graze. They "surf." The more concisely you can organize your message, the more effective it will be.

You are being given the opportunity to maneuver your way into the psyches of millions of people. Spoon-feed them your ideas and they'll be more willing to stay and more willing to come back for more.

- **Do not place text across the full width of the screen:** For long selections of text this is unreadable. Limit text to no more than half the width of your screen.
- **Size does count:** When you put text into HTML format, stick to using the default font size for most of the text on the page. This way you will ensure that what you are designing will be properly seen by most people. Use different sizes of text to create variation on your page. But don't forget, fonts that are too small infuriate and fonts that are too big irritate. Use both sparingly.
- **Sprinkle in a few surprises:** Emphasize and highlight various words scattered through each Web page to catch the reader's eye. Because links are automatically underlined, it isn't a good idea to underline non-linking words. It will cause confusion. Use colored, bold, or italicized text instead.
- **Always include a TITLE tag:** Have the title of your page clearly define what is found within it. When you are creating a TITLE tag think of what you want the reader to remember most about your site

when they scan through their bookmarks.

- **Preview your pages:** Always do this before you upload them.

A paperless age? (ha ha)

I can't speak for everyone, but I do know that I print out a lot of Web pages. I prefer to surf fast, print out what looks interesting, log off the Internet, and then take my printed pages to my couch or out with me when I go to a cafe. Let's assume I am not the only one who does this. Design your text-filled pages with printing in mind.

- **Create two versions:** Have one version of your text split into segments and accompanied by graphics and links. Have a separate page where the text is uninterrupted. Encourage your reader to print out the latter page.
- **Again, be considerate of your readers:** The width of browser screens is not the same for everyone. Text placed across the full width of your screen may look fine to you, but not to others. Lines may be cut off on the right side of their screen. When they print out pages that extend beyond their screen width, the printer also cuts off each line. If you want to have long lines, at the very least, create a one-inch margin on either side of the text.
- **Be color conscious:** Choose your background and text colors very carefully, keeping in mind how they will look on a printed page. Red text on a yellow background, for example, prints out faintly. White text on a black background is invisible on a printed page. If your text is important, stick to the basics; black on white.
- **Do you really want to use frames?** Some browsers cannot print frames correctly. Think about what portions of your text would be suited for frames and which segments need to be presented on a full screen for pleasing printouts.

Change the world

With the investment of thought and time, you can impact your readers with your own words and ideas. Give them what you desire the most: simplicity, thoughtfulness, and convenience. Good luck! □

Wendy Boulding is an Edmonton-based writer who spends hours each day probing the Web for things and people to write about. She can be reached via email at wjb@planet.eon.net.

Online writers' resources:

Art and the Zen of Web Sites

<http://www.tlc-systems.com/webtips.htm>

Elements of Style

<http://www.columbia.edu/acis/bartleby/strunk/>

Online English Grammar

<http://www.edunet.com/english/grammar/index.html>

Sun On The Net: Guide To Web Style

<http://www.sun.com/styleguide>

Web Architect

<http://webreview.com/universal/previous/arch/>

WORD

<http://www.word.com>

The World Of Writing

<http://www.bloostreet.com/300block/3author.htm>

 NEWS
Renewed Lotus bullish on its future*Continued from page 57*

Developer Kit (SDK), we intend to further that momentum by allowing developers to choose the best tools for the job, with the appropriate support infrastructure to meet their needs."

Leaving aside the product specifics of this event by the ocean, with the towering mouse ears in the background, it becomes clear that Lotus is a dramatically different company from the embattled enterprise that washed up on IBM's corporate shores back in 1995. It appears to have focus, direction, a strong sense of where it fits within IBM and a strate-

gy that seems to look first at its customers—not on how it can outwit Microsoft.

Also telling during this event, was the was a significant number of attendees from Canada, which has one of the highest rates of penetration of Lotus Notes in the world, accordint to Lotus. It is also interesting that company president Papows reports to John Thompson, the former head of IBM Canada, and now the vice-president in charge of IBM's software division.

At a press reception following the first day's announcements, Thompson was friendly and approachable—even offering a few

thoughts about issues not related to the Lotus strategy, such as the impact of the Compaq/Digital merger on the landscape of the computer industry. Thompson suggested that this should just make the merged Compaq/Digital company a bigger customer for Lotus products, although he doubted that Compaq would have much money left over after spending \$9 billion to buy Digital.

The other big change for Lotus is that it finally seems to be at peace with the many mistakes it made during its long, agonizing decline in the early part of the 1990s. Deadline after deadline would slip by for the release of updat-

ed products—notably a useful version of Lotus 1-2-3 for Windows—while Lotus doggedly tried to squeeze more market out of versions of 1-2-3 for OS/2 and for mainframe computers.

That, and the long, sad history of SmartSuite, appear to be in the past. Lotus is now looking at the assets it has—most importantly a 20-million seat base for Lotus Notes and a \$60 billion-plus parent corporation—and appears to have decided that both of those factors make it worth getting up in the morning. Perhaps hosting its conference at Disney World was just the Lotus way of saying it had rediscovered its childhood. □

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 NEWS

Fujitsu develops secure archiving system for electronic files • TOKYO (NB)—Fujitsu Laboratories Ltd., a unit of Fujitsu Ltd., has announced what it claims to be the world's first secure archive system for electronic documents. The new system will authenticate the originality of any electronic document before storing it in the archive.

The new system has been designed to overcome a problem now facing many businesses—how to tell if an electronic document is the original or a changed copy. Paper documents used for legal work are a good example

where several copies are required and it is necessary to know which is the original and what has been changed.

A system was developed that allows authentication of the originality of an electronic document, making possible secure storage and management of sensitive electronic documents in an open network environment.

The company designed a new dedicated LSI (large-scale integrated circuit) chip which, mounted on a printed circuit board and connected to an MO (magneto optical) drive, detects data revisions to files. The eventual

commercial system will consist of a sealed unit, which internally consists of an MO drive and the LSI board, that would be connected to a PC like any other peripheral. The MO disk will be accessible, to allow users to transfer documents from one source to another.

For each file stored on the drive, the LSI creates a file which records secure identifying information, including file location, content and history. The coded file is automatically created each time a new file is stored on the MO disk and is also stored on the same disk.

Using the system, said Fujitsu, it is easy to discover details of the electronic file. Documents can be immediately identified as original or copy using the information stored in the coded file.

Revisions can be added directly to stored original documents, but they are detected and identified as such immediately through identifying information that does not match the revised document. This way, a user is always aware what has been subsequently added.

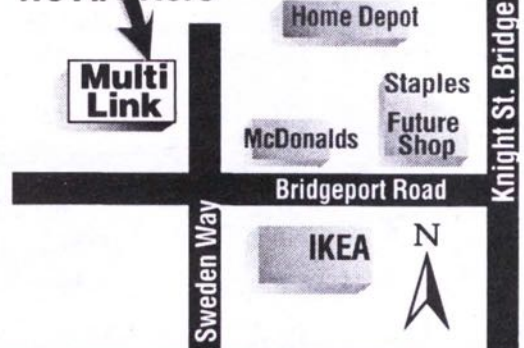
Fujitsu says it expects the new system to be available for sale commercially in 1999.

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High-tech groups praise federal budget

BY GRANT BUCKLER

OTTAWA—With a few reservations, the high-technology industry seems pleased with the federal budget brought down by finance min-

ister Paul Martin this week. The budget's emphasis on education and training, and added support for science and technology, particularly pleased the high-tech community.

"The focus on education reform and affordability issues addresses the number-one concern of the information technology sector, which is skills," Gaylen Duncan, president of the Information Technology Association of

Canada (ITAC), said.

Among the budget's education-related changes are a program of university scholarships and tax breaks for people paying off student loans or saving for their children's education.

"The focus on education reform and affordability issues addresses the number-one concern of the information technology sector, which is skills"

—Gaylen Duncan, president ITAC

The Canadian Advanced Technology Association (CATA) said in a statement that the government's education and scholarships initiatives get an A grade. CATA president John Reid, who was out of town and could not be reached for direct comment, said in a prepared statement that "Canada's success in the global economy depends on attracting and retaining advanced technology enterprises and highly mobile knowledge-based workers. The way to get there is through investing in research and development and education. Martin is on the right track."

CATA also praised the government's deficit reduction and spending restraint. This budget is a balanced one for the first time in 28 years.

However, Duncan said there is another area that needs to be addressed. The government needs to make Canada a more attractive business climate to attract foreign investment and keep skilled workers at home. That would presumably mean reduction in personal and corporate taxes, among other measures. Otherwise people with marketable high-tech skills will be tempted to move to the U.S., and "it's going to be very, very expensive for us to become nothing more than the education system for the American market," he said.

Duncan admitted that what he is seeking would be "politically unpopular" at the moment, "but it should come into play in the next year."

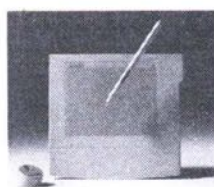
The Natural Sciences and Engineering Research Council (NSERC), a government-funder granting agency for research and development, praised Martin's increase in research and development spending.

While business liked the budget, its reception was not so positive elsewhere. The Canadian Union of Public Employees (CUPE), for instance, blasted even its education provisions, saying university funding must be increased and tuition charges reduced. □

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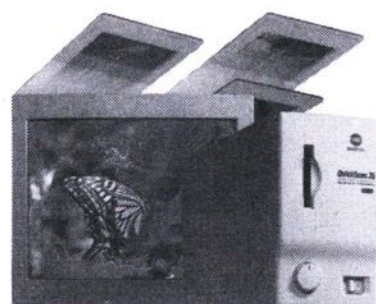
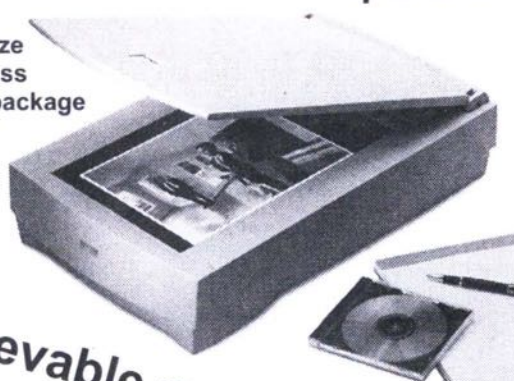
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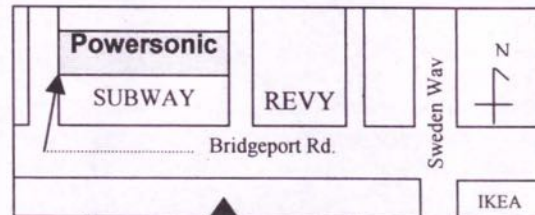
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ASUS P2L97 Pentium II AGP ATX.....215
440LX Chip Pentium II AGP ATX.....169
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Intel TX 512K U.DMA + 3D Sound.....114
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Pentium 512K U.DMA.....86

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ESS1869 / Zoltrix 3D 16bit Full-Duplex.....22
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Altec Lansing ACS45 Subwoofer.....107
60w/80w/120w/320w Speaker.....16/18/36/ 48
Microphone.....6/ 9/ 14
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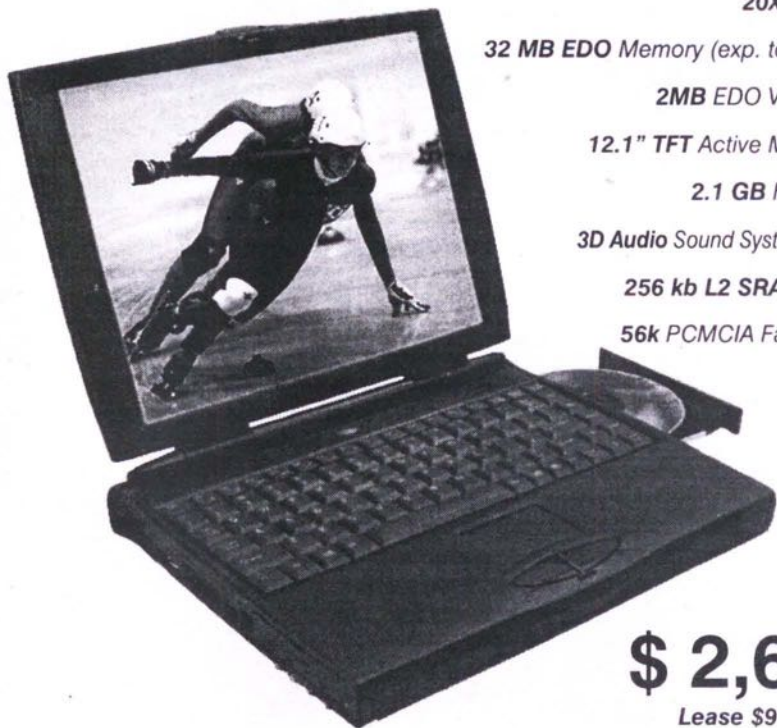
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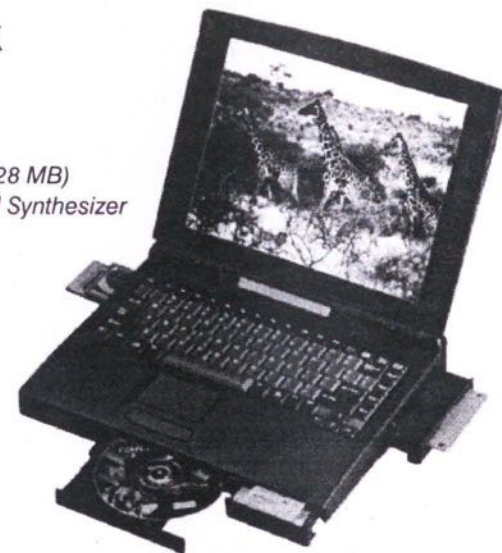
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The Computer Paper

Small Business Computing

The technology resource for growing business in Canada

Business briefs

CATA lobbies for measures to increase tech-skills supply

OTTAWA (NB)—Canadian Advanced Technology Association (CATA) is encouraged by the Ontario government's response to its challenge to "double the pipeline" of workers with technology skills. CATA hopes to extend the campaign nationwide.

The association, which represents high-technology firms, asked the provincial government during pre-budget consultations to take several measures to double the enrollment in computing science, computing engineering, and electrical engineering programs in universities. CATA president John Reid was pleased with the response, saying that both the governing and opposition parties supported CATA's proposals.

CATA asked the province to fund a Double the Pipeline Fund with \$7.5-million this year and a total of \$55.7 million over four years, and to lift restrictions on how universities may shift funding among different programs, a move that could clear the way for money to be diverted from other areas to finance expanded computing and engineering programs.

CATA is also calling on industry to contribute at least \$2.3 million per year to the fund, and to provide cooperative education positions. It wants universities to contribute as well, and to provide infrastructure for the expanded programs.

"We're going to try to replicate this in each of the provinces," Reid said, "except as you know in each of the provinces there's a different route to get there."

According to CATA, Ontario alone will need more than 56,000 new workers in the information technology field in the next five years, but will produce only 14,000 qualified graduates. Contact: CATA, <http://www.cata.ca>

IBM Canada introduces servers for small, medium business

MARKHAM (NB)—Joining its U.S. parent company, IBM Canada has launched new Netfinity, AS/400, and RS/6000 servers. In Canada, the Netfinity 3500 Intel-based server starts at \$3,999. The AS/400e Server 170 starts at \$16,500, and the entry-level 150

Continued on page 80

A primer on short run printing

BY CHUCK GALLOZZI

You need 700 copies of a color brochure printed pronto. Where do you go? You leaf through the Yellow Pages and discover that you can choose from instant printers, service bureaus, and conventional (offset) printers.

Instant printers are eroding the market share of traditional offset printers and professional service bureaus, both of which are fighting back by dropping prices. Additionally, new technology continues to raise the quality of digital prints. The once-crude color output of these digital printer/copiers is now approaching photographic or offset quality.

Kinko's is typical of the new generation of instant printer, offering some of the trappings of a service bureau. For example, it supports the same software (Quark XPress, PageMaker, etc.) as a service bureau, but output options are more limited (it doesn't have electrostatic printers for murals, for example). Also, the outlet may sub-contract part or all of their mounting and lamination—perhaps to a service bureau.

Service bureaus cater to all markets, from huge advertising agencies to small business owners. They have the most equipment and the most knowledgeable production staff. In addition to pre-press work, they may have film recorders to make slide presentations, plus equipment to make vinyl signs for trucks, murals for offices and trade shows, posters for display, enormous architectural drawings, and even dye sublimation printers to run off business cards.

The trend is for these three forms of business to continue merging. The print industry is being pro-



pelled by technology and competition. Instant printers caused upheaval by taking business from offset shops and service bureaus, which retaliated by dropping prices and broadening their range of services. Each of the three sectors is fighting for market share and is in direct competition with the others.

Which type of printer should you visit? That depends on what you are looking for. Best quality? Lowest price? Fastest turn-around time? Convenience?

There is overlap in the services provided by the three groups. Understanding the pros and cons of each type of service will help you decide.

Offset printers

Pros

Convenience: If you have a regular printer, all you have to do is pick up the phone and a rep will come to your office to discuss and pick up the job. There is nothing technical for you to worry about and no need to leave the office. ➤

Gambling with the millennium

BY GEOFF WHEELWRIGHT

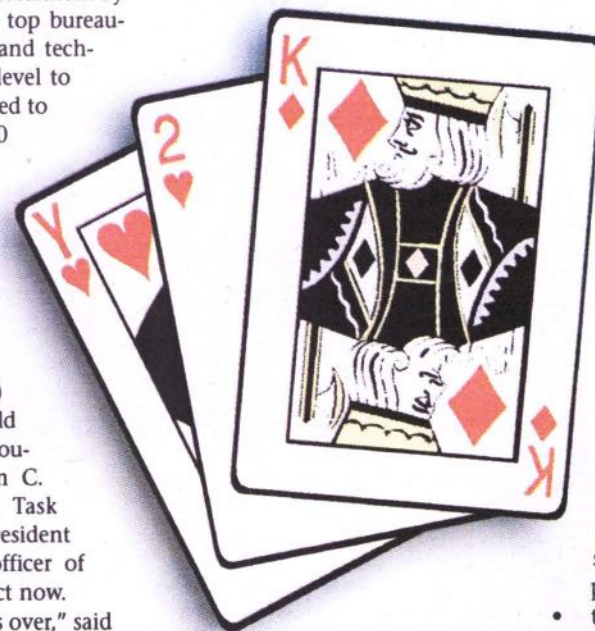
Our number one recommendation is to urge executives who have not already done so to implement immediately a formal action plan for Year 2000 preparedness. This has become a national priority.

Ill-prepared, inadequate and just not ready. No, this is not a description of the Canadian men's Olympic hockey team, but rather a very sobering assessment by many of the country's top bureaucrats, business leaders and technology experts of the level to which we are all prepared to deal with the Year 2000 computer problem.

According to a report released by SOS 2000 (a joint initiative of the Canadian government's Task Force 2000 and leading Canadian businesses) in February, this could land us in a heap of trouble. According to Jean C. Monty, chair of the Task Force Year 2000 and president and chief operating officer of BCE Inc., we need to act now.

"The time for talk is over," said Monty. "Our number one recommendation is to urge executives who have not already done so to implement immediately a formal

action plan for Year 2000 preparedness. This has become a national priority."



Monty said the matter is so urgent that the Task Force Year 2000's report—A Call for

Action—was published four months earlier than planned because of concern by the 14 chief executives on the task force (including Royal Bank of Canada boss John E. Cleghorn and IBM Canada's John D. Wetmore) that the situation required a more immediate response.

The report contains 18 recommendations, including:

- that formal action plans be shared by all trade partners associated with Canada's national supply chain;
- that private and public financial institutions actively promote with their stakeholders the availability of formal action plans;

that a tax-neutral initiative be introduced to encourage small- and medium-sized companies to act immediately;

- that parliaments, at all levels, bring enhanced public scrutiny to the country's state of preparedness.

Continued on page 74



Small Business Computing

A primer on short run printing

Continued from page 69

That's convenient.

Quality: If you need optimum quality to promote your business, this is the route to take. Color laser copies may be all right to promote a cake sale, but if you're promoting your \$2,000 a day consulting services, you will want your handouts to look perfect.

Volume discounts: Perhaps you just need 700 copies of your brochure this month, but if you go through 8,400 copies a year, you can order them all at once for large savings. Your printer may even store them for you, delivering them to you as needed.

Cons

Convenience can be costly: Sure, it's nice to have a rep come to see you whenever you call, but you are paying the rep's commission and contributing to his or her car allowance by paying higher prices.

Longer turnaround time: Conventional printers have to shoot a negative or make color separations and a plate before the job can go to press. This step adds to the cost and increases production time. Also, every time you make a change, costs go up and the project is further delayed.

Stockpiling has its weakness: The savings accumulated by stockpiling a year's worth of brochures can dwindle or even evaporate if a new address or sudden change makes them obsolete. Even a small change can call for modifications, new separations and plates, and reprinting costs.

Instant printers

Before discussing the pros and cons of instant printers, I'd like to point out that the great range of services provided by this broad group, in addition to wide variations in quality. There are small mom and pop operations as well as huge, technologically advanced chains. Because of these variances, it is difficult to make blanket statements that apply to all of them. Nevertheless, it may be useful to offer some general observations.

Pros

Convenience: Instant printers are popping up everywhere. If there isn't one in the building where you work or across the street, you will find one in a nearby plaza or mall.

Quick turnaround time: When you need color documents now, the instant printer is the place to go.

Portability: Off to a trade show or convention in another city? You don't have to transport or lug around 1,000 copies of that 40-page manual. Instead, just slip a Zip cartridge with the document file in your pocket, arrive at your destination early, and have it printed out at a nearby instant printer.

Print as needed: Instead of stockpiling documents at an offset printer, you can print only the quantities you need as you need them. If you need changes in the next printing, it may be possible to make them in minutes, and color separations or plates are not necessary for a digital printer.

The relationship: In a small print shop you

may be working with the business owner and develop a valuable relationship. After all, if you work on many important projects, it will be helpful to have a strong ally.

Cons

May lack knowledgeable staff: The smaller print shops may not be able to afford the higher wages necessary for attracting knowledgeable staff. If you are working on a complex document and need advice, you may not be able to find answers to all of your questions.

Watch the price point: Once your quantity approaches 1,000 copies, it is time to compare prices with an offset printer. As an example, 1,000 letter-size color laser copies or digital prints may cost \$750. Yet, the same job done on an offset press may cost as little as \$500. In other words, you may be able to receive the higher quality of offset for the same price as color laser copies.

Service bureaus

Pros

Expert help available: Service bureaus are where the experts in the digital print industry work. If you're inexperienced and have lots of questions, these are the right places to go for answers.

Wider range of output devices: From business cards to murals, from architectural drawings to vinyl signs, it's all done here. Their output devices may include laser, bubble jet, dye sublimation, and electrostatic printers, film recorders, and more.

Complete finishing services: They offer many types and sizes of mounting and lamination done on the premises.

Cons

Slower turnaround time: They carefully examine digital files and may make test prints before production, all of which increases the time needed for the job. Unless you're paying a premium, don't expect the speed of an instant printer. Nevertheless, they are faster than offset.

Less convenient location: Because of huge capital costs and the need for large facilities, service bureaus are apt to be located in industrial areas where it is cheaper to run a business.

Expensive: The other side of the coin is you get what you pay for. Someone has to pay for the team of experts and high-volume, high-quality digital print equipment.

Preparing digital files

Don't work on a job and then look for a shop to print it. First pick an instant printer or service bureau you would like to do business with and ask questions. Tell them what you would like to do and ask for the best way to do it. You can save yourself much grief by carrying out the following suggestions.

Platform compatibility: Will you create your digital file on a PC or a Mac? Make sure your shop of choice supports your platform.

Program compatibility: If you create your file in Adobe Photoshop, Illustrator,

Pre-press preflight

The following is a list of questions to ask as you select a printer and prepare your digital files:

Choosing a printer

- What platforms does the printer support? (PC or Mac)
- What software does the printer support? (Corel Draw, Illustrator, etc.)
- What versions of these applications does the printer support?
- Does the printer need files in their native format? (CDR, etc.)
- What storage media can the printer read? (Zip, Jaz, or MO disks, etc.)

Preparing your files

- Did I test the characteristics of the shop's printer?
- Did I save all elements of my file, including fonts?
- Did I include a sample print?
- Do I have a backup copy of the file?
- If applicable, did I specify glossy, matte, or textured lamination?
- If applicable, did I specify Foamcore or Gatorboard mounting?

—Chuck Gallozzi

PageMaker, Quark XPress, or CorelDraw you should have no problem, but ask first. Avoid using programs such as Microsoft Word and Publisher or Corel Word Perfect as they may not print as you originally intended.

Program version: Besides supporting your program, the print shop must also support the version you are using. There could be compatibility problems if your version is too old or too new.

File format: Once you save your document, a digital file is created. Digital files can be saved to disk in their native format, printed to file with the same printer driver used by the print shop, or printed to file with a generic postscript driver. Most shops prefer to have you save the file to disk in its native format. This is because they will be able to open the file and edit it if necessary.

File delivery: You can deliver your files on storage devices or transmit them electronically. If you plan to deliver them on a Zip, Jaz or Syquest cartridge, make sure the shop can work with it. For electronic delivery, you can transmit your file direct to your shop's modem or attach it to an email. For email attachments, however, Internet service providers generally limit the file size, for example, to 2 MB or less.

Run a test first: Perhaps you have designed a flyer in CorelDraw that looks great on your monitor and prints equally well on your inkjet printer and you now wish to have it mass produced on a color laser printer. Since it is a different type of printer, the output will differ from the results you are familiar with.

For example, after printing your flyer on the color laser printer, the thickness of lines may appear too thin. Also, light backgrounds, such as 15 percent yellow may appear as white, and your favorite color may have a different cast and appear too dark. So before you begin your project, make a simple document that contains lines of various thicknesses, and boxes of different colors and densities, labeling each element carefully. After examining your test print, you'll know how to adjust your flyer for optimal quality.

Include all elements: When saving your page layout file to disk or cartridge, be sure to include every element that appears in the layout. Separately save every drawing, photo, and font that appears in the layout on the same disk. Failure to do so can result in missing artwork and wrong fonts.

Include a sample print: If you include a sample made with your inkjet printer, the shop

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will be able to spot any inconsistencies and correct the problem. Better that you both find out about the problem after the first print than after a run of 300 copies!

Keep a duplicate copy of the file for backup: Have you ever experienced a computer crash and loss of a file? Then it should come as no surprise that the same can and does happen at print shops and service bureaus. So protect yourself with a backup. *Never* give away your only copy.

Specify glossy or matte lamination: If you are making a poster or other large printout, you will probably want to have it laminated. Lamination will protect it from tears and rips, moisture, and fingerprints. It also helps keep the print flat and reduce color fading. However, don't forget to first check and then specify the type of lamination you prefer: glossy, matte, or textured.

Glossy finishes increase contrast and sharpness, but are susceptible to glare and reflections. Matte surfaces reduce glare, but also reduce overall sharpness and contrast. Textured material is excellent for concealing scratches and is less susceptible to glare.

Mounting: If your printout needs mounting, two popular choices of material are gatorboard and foamcore. Gatorboard is the more expensive of the two, and is thin, stiff, and somewhat fire resistant. Foamcore is cheaper, lightweight, and not as stiff as Gatorboard.

Additional tips

For additional tips, I am going to quote from one of the most knowledgeable men in the

industry, Jacob Reichbart of West Canadian Graphics in Calgary:

"The best advice I can give anyone hoping to achieve flawless results without delays is to involve a knowledgeable service provider as early as possible in the design cycle. Production isn't something that one tacks on to the end of the project at the last minute. Production design is something that must be planned before one even starts to build the job.

"Among professionals, production design occurs early, during concept development. The mark of a seasoned professional is that they can develop a concept *and* workable, economic production methods simultaneously. Engage your service provider or a third-party production designer in the conversation during development and the work will go smoothly without last minute surprises and disappointment." □

Acknowledgments

I'd like to thank the following individuals, who have graciously taken the time to share their expertise with me:

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David A. Turner, Kinko's
Mississauga, Tel: 905-306-0550

Shaun Jensen, Henry Armstrong's Digital Print Shop
St. James, MB, Tel: 204-958-4246

Tony Smith, Riley's Reproduction & Printing Ltd.
Calgary, Tel: 403-297-1234

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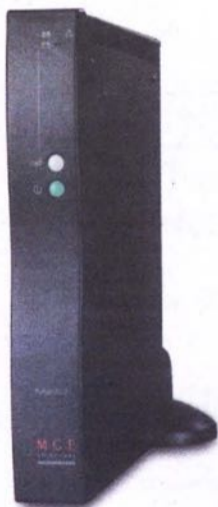
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Small Business Computing

Gambling with the millennium

Continued from page 69

"The campaign is purposely forceful to send a clear and resounding message to all executives that there is no economic or financial advantage to waiting—in fact, the opposite is true," said Monty. He reiterated the shocking findings of the earlier preliminary study results released by Statistics Canada in December 1997, which found more than half of all Canadian firms are taking no action to prepare for anticipated computer malfunctions leading up to 2000.

The preliminary release showed that awareness is not the issue so much as deficient action: of the 2,000 companies surveyed, 90 percent were aware of technical problems that could arise, but 50 percent of those had done nothing about it.

"Basically, there are no excuses," said Monty at that time. "Companies must take the time, spend the money, devote the resources, and do it now. Failing to take a formal approach to solving the problem puts the enterprise at risk and all of its partners in the supply chain."

Of concern to the Task Force is that fewer than 50 percent of large companies have formal plans, hence, their efforts could be deficient. Monty warned that the problem could not only impact computer hardware and software, but also networks and microprocessor chips, such as those that control transportation, machinery, elevators, office equipment, lights, building climate, and security systems.

The current economic outlook for Year 2000 is now at risk because too many businesses have failed to start the repair

—Conference Board of Canada

The Task Force study results were reinforced by the Conference Board of Canada publication, *Viewpoint*, which was also released in February. That report concludes that although well-prepared firms stand to make significant gains against those that are not, all could be lost if their suppliers and trade partners are not also ready. "The current economic outlook for Year 2000 is now at risk because too many businesses have failed to start the repair and replacement of technology," said Jim Frank, the board's chief economist.

But Monty and the Task Force seem to have widespread support in tackling the problem. The Canadian Federation of Independent Business, for example, is mailing a copy of a publication called *The Year 2000: Technology Checklist for Small Business* to its 88,000 members, and will communicate information to them via its Web site. "Small companies have to realize that this is a real problem which requires immediate action," said CFIB president Catherine Swift.

In addition, the Information Technology Association of Canada (ITAC) has reviewed international initiatives. "Our study suggests that the countries that are responding to the challenge most effectively are those whose industries and governments are working together to ensure that critical systems will continue to function," said ITAC president and chief executive officer Gaylen A. Duncan. "We fully endorse the Task Force's recommenda-

tions and will continue to convey the message to our industry and stakeholders to act now!"

The Task Force says it will reconvene in May to assess progress on the computer date problem.

Year 2000 backgrounder

Also known as the "millennium bug," the Year 2000 problem could potentially cause havoc in financial agencies, government agencies and businesses both large and small once the clock zips past midnight on Dec. 31, 1999.

Simply put, the problem is this: after this time many of the world's largest and most vital computer systems (along with lots of mid-size and smaller systems) will not know what day it is. If you ask them for the date, these systems will tell you—on Jan. 1, 2000—that you are actually living in January 1, 1900.

The problem exists because back in the early days of the computer industry, when computer memory and storage space were scarce, programmers decided on a convention for date storage that represented the year with only the last two digits of the year in question. The first two digits were always assumed to be 19.

Therefore, 1969 was represented as 69, 1981 as 81, and so on. This little trick works without difficulty until you hit 2000, which is represented by these older computer systems as 00. Because the first two digits of the year date are assumed to be 19, this means that the computer thus records the year as 1900, not 2000.

And why, you may well ask, is this important? The answer to that question strikes at the very heart of how computers are used in business, government, health care, the defense industry or almost anywhere else. In recording any business transaction, a computer wants to know the same kinds of things you do when writing out a cheque: who the transaction is with, how much it is for and the date of the transaction.

But the computer doesn't stop there. Once it has such a dated record on its database, it can then make calculations based on that date. These calculations can be as simple as the number of years remaining on a mortgage (the year of maturity minus the current year). They might have to do with the age of a driver getting his or her auto insurance renewed (the current year minus the year of the driver's birth) or something as complex as compound interest calculations.

One thing remains constant, however, and that is that if the calculations are wrong, the systems will not work. In the case of a mortgage system that did not correct this Year 2000 "bug," for example, subtracting the current year from the year of maturity would actually yield a negative number. This is because if the date of maturity is any year between the Year 2000 and 2097, it is stored by the system as a date between 1900 and 1997.

Countdown to 2000 survey results

Launched in September 1997, the Task Force Year 2000 says it quickly took steps to get a clear picture of the facts and activities taken by Canadian firms to deal with the Year 2000 millennium bug. Statistics Canada was invited to produce a national survey on the preparedness of Canadian businesses for the Year 2000 because of their credible methodological expertise. Preliminary findings were published on Dec. 8, 1997. Two thousand respondents from small-, medium- and large-sized

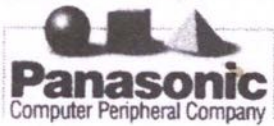
Continued on page 78

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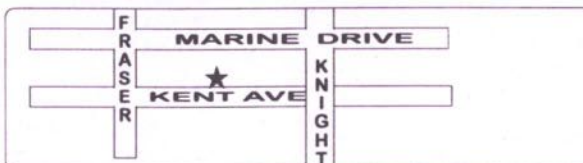
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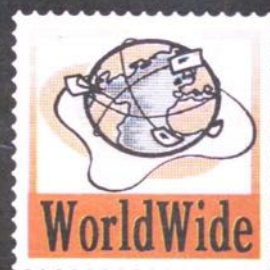
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- (or PARTS Warranty applied)

PARTS:

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After 10 days \$10 for HardDrive, Monitor, MotherBoard,

Printer, \$5 for all other types

PERIOD: Manufacture Warranty

PRICE IN BLUE: For Common Buyer

Warranty Policy:

- SYSTEMS: 2 years Parts & Labour unless specified
- PARTS: NO Handling fee

PERIOD: Manufacture Warranty

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- ATX 19.....\$76 \$81
- ATX 24.....\$100 \$105
- Full Tower 25.....\$118 \$123

CD ROM

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- Acer 24X.....\$85 \$90
- Panasonic 24X.....\$89 \$94
- Panasonic 32X.....\$115 \$120
- Imega Int. Zip Drive (IDE).....\$132 \$138
- Imega Zip Plus Ext. Drive.....\$263 \$273
- HP CDR/W 7200i.....\$560 \$570
- Panasonic LS120 Drive.....\$148 \$152
- Yamaha CDR/W 4260 Drive.....\$640 \$655

Controller Card

(approx.)

- Adaptec 2940.....\$235 \$245
- Adaptec 2940U.....\$245 \$255
- Adaptec 2940UW.....\$285 \$295

CPU

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- AMD K6-166.....\$168 \$173
- AMD K6-200.....\$181 \$191
- AMD K6-233.....\$220 \$230
- Cyrix 6x86 200+.....\$101 \$106
- Cyrix 6x86 MX 200+.....\$108 \$113
- Intel P166 MMX.....\$147 \$152
- Intel P200 MMX.....\$172 \$179
- Intel P233 MMX.....\$269 \$279
- Intel PII 233.....\$400 \$410
- Intel PII 266.....\$549 \$559
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- Intel PII 333.....\$1085 \$1088

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- W.D. 4.3GB UDNA.....\$280 \$285
- W.D. 6.4GB UDNA.....\$375 \$380
- Quantum 2.1GB SE.....\$205 \$210
- Quantum 3.2GB SE.....\$254 \$259
- Quantum 4.3GB SE.....\$280 \$285
- Quantum 6.4GB SE.....\$360 \$365
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Quantum 4.3GB UWViking.....\$495 \$503

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(approx.)

- Ergonomic.....\$57 \$59
- Fujitsu 4725.....\$54 \$57
- Fujitsu 8725.....\$26 \$28
- M.S. Natural.....\$68 \$72
- WIN 95 104.....\$15 \$17

MEMORY

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- 8M 72Pin EDO.....\$23 \$23
- 16M 72Pin Regular.....\$40 \$42
- 16M 72Pin EDO.....\$39 \$41
- 32M 72Pin Regular.....\$81 \$85
- 32M 72Pin EDO.....\$73 \$77
- 32M 168Pin SDRAM.....\$73 \$77
- 64M 168Pin SDRAM.....\$188 \$193
- 128M 168Pin SDRAM.....\$405 \$410

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- Acer 56K Int. Fax/Voice.....\$89 \$93
- Motorola 56K Int. Fax/Voice.....\$120 \$125
- USR 33.6K Int. Fax/Voice.....\$120 \$124
- USR 56K Int Fax/Voice.....\$145 \$149
- USR 56 Ext. Fax/Voice.....\$282 \$287

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- Daytek 17 1731D.....\$480 \$490
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- UMAX Astra 1200S.....\$Call \$Call

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- Acer AWE35 Pro 3D.....\$40 \$42
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- Matrox Millennium II 4M.....\$210 \$215
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Small Business Computing

On demand publishing meets the Web

Case study: Trafford Publishing carves a niche

BY MARTIN P. WATERMAN

A few years back, many were declaring that print was dead! The Internet was seen as the next great—and more efficient—way to distribute information. Some believed magazines were particularly vulnerable, as e-zines (electronic magazines) were becoming popular.

Well, it turns out the death announcement for the print industry was a little premature. As just one example, in the U.S., there are now more than 4,100 magazine titles available at the newsstand, an increase of over 150 percent from a decade ago. In addition, the most popular of e-zines now have print versions. Book publishing, too, continues to grow rapidly despite challenges from the Internet. It seems that few people want to read more than a few hundred words online, preferring the good old paper versions instead.

When I learned that Victoria-based Trafford Printing (<http://www.trafford.com>) was using the Internet to attract both authors and the book-buying public, I was not particularly interested. I already knew of a handful of sites where you can preview a chapter of a book,

and if you like what you see, purchase it, download it and print it off.

However, Trafford has gone a step beyond the others and is offering a comprehensive publishing service for self-publishing authors, which they call "on-demand publishing." What Trafford has apparently created, is a hybrid technology, using the best of Web and conventional publishing.

At the heart of the system, Trafford takes advantage of existing printing technology—using a Xerox DocuTech 135—that makes it financially viable to print a single copy of a book. The DocuTech is a high-speed, 600 dpi digital copier/printer that accepts digital files.

Trafford had to overcome a number of problems to make the system cost effective. One of the company's major victories was in developing a system to perfect bind their books (perfect binding is a common method for binding traditionally printed books, but not so common with copier/printers), a method the company closely guards.

At first, Trafford used coil binding for orders of fewer than 100 books. However, the coil binding was not appealing to authors, who wanted their books to look any other on the bookshelf or the bookstore.

Print to order

The Trafford system appears to be very simple on the surface. Orders arrive from all over the world (33 countries thus far) via Trafford's Web site. Internet customers can browse through and order a wide spectrum of books from Trafford's rapidly growing stable of authors, who also are located all over the world. Once the orders are received, the books are printed, bound, and shipped.

In addition to being listed on the Web site, Trafford titles can also be ordered through virtual bookstores such as Amazon.com and books.com. This gives two more sites where potential customers can find books. Trafford sets up each book on its own Web page, and alerts major search engines of the book's keywords. A press release is sent out via email to hundreds of media contacts, and review copies are sent to potential reviewers identified by the author.

Authors pay around \$1,400 to have their book published, complete with ISBN and CIP numbers, barcode, a listing on the Trafford site as well as numerous other services. (Details can be found in the authors guide, which is available for a small fee, or can be read at its Web site.)

Self publishing alive and well

The number of potential authors is quickly growing (baby-boomers, in particular, apparently feel they have something to tell others), and Trafford's objective is to have 12,000 authors by the end of 1999. The company is counting on the industry adage that for every book that gets published, 10 or more do not.

Bruce Batchelor, author, former magazine publisher and president of the company attributes the growth in his stable of authors to the fact that they can see an advantage over the traditional self-publishing route. Many self-publishers are experts in their fields, however, it may not make financial sense for a traditional publisher to print their book if it will not appeal to a wide audience.

Even if the book were accepted by a traditional publisher, Trafford offers other advantages that may appeal to authors. The author sets the price as well as the royalty, which is several times that of a traditional publishing arrangement. This is very welcome, especially for those who are able to sell their own books at seminars or by other means. For those who are positioned to sell their own book, they might earn \$10 per copy instead of a conventional publisher's royalty of between

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Small Business Computing

Gambling with the millennium

Continued from page 74

Canadian firms took part in the survey.

- 90 percent of all companies were aware of technical problems that could arise
- 50 percent of those aware have done nothing about it
- 60 percent of small firms have taken no action
- 30 percent of medium-sized companies have not begun to address the problem
- 92 percent of large-sized firms were addressing it in some way but only 48 percent have made formal plans
- finance and insurance firms are leading the way, 65 percent have taken formal and informal steps to tackle the issue compared to between 42 percent and 50 percent of

firms in manufacturing, transportation, communication, utilities, wholesaling, retailing and other service industries

- only 13 percent of those aware of the problem are looking into preparedness of their customers, suppliers and service providers
- 82 percent of those aware of the problem still believe there is no potential for their own liability arising from potential malfunctions. □

Contact:

Information from Industry Canada on Year 2000 problems and solutions is available by calling the Canada Business Service Centres at 888-811-1119.

On demand publishing meets the Web

Continued from page 77

\$1 to \$2 per \$20 book.

As well, compared with other self-publishing systems, Trafford's customers don't have to pay for high print runs or worry about inventory. And one of the best features is that authors retain full copyright of their work and always have the option of selling them to another publisher or negotiating all or part of their rights to any other interested parties.

Trafford has also attracted individuals and companies involved in training who have unpredictable printing needs. Stellar Systems a software trainer in B.C., has placed nearly 100 of its training manuals with Trafford. This allows Stellar to deal with individual orders more easily, while giving them international exposure over the Internet.

Business model

Trafford is in the process of setting up alliances with companies and individuals to refer authors to Trafford's service on a commission basis. The Trafford Publishing Network, which is intended to include print shops, trade publishers, libraries, book sellers, book trade professionals and others, is expected to be a prime source of potential authors.

In putting together this publishing venture, Trafford developed proprietary On-Demand Publishing (ODP) software to control all aspects of its operation. The software is currently available to other printers who may want to set up similar ventures.

One factor that has other printers interested in the ODP software, or in forming alliances with Trafford, is the success Trafford has had with the public sector. It has already secured contracts to publicize and sell copies of publications offered by various departments of the government of British Columbia.

Trafford titles cover a wide spectrum from government publications, training guides, how-to books and even some fiction. Authors who do well seem to hit a niche market. For instance, Lucas Aykroyd's book *1984: The Ultimate Van Halen Trivia Book* has done quite well, with the author receiving regular royalties. In addition, Aykroyd appreciates that he does not have to worry about filling orders.

Two other books that are doing well are *Fitness for High Performance Hockey* by Howie Wenger (an exercise physiologist and physical conditioning consultant for the New York Rangers), and *The World Wide Web of United* by David Menashe, whose book is a compilation of email concerning the Manchester United soccer team.

Consultants and experts in a number of fields are also using Trafford to enhance their business. Nelson Winkless, a New Mexico-based author has published *The Elements of Business Communication* through his own company, which contracts the publishing work to Trafford. Winkless, who has had experience with traditional publishers, says "sometimes, [a traditional publisher] is not the way to go, and self-publishing is more productive, gives the author more control, a bigger piece of the pie, and allows more targeted marketing." □

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- Mid Tower ATX Case
- Warranty 2 Years Parts & Labour

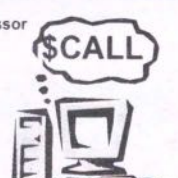


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380ED	166mmx	16MB	5.0GB	20X	12.1TFT	\$4,499
760XD	166mmx	32MB	3.0GB	8X	12.1TFT	\$5,699
765D	166mmx	32MB	3.0GB	8X	13.3TFT	\$5,999
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OPTRA SC 1275N 3ppm, 16MB, Ethernet	\$6,239
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Continued from page 69

model at \$11,999. The RS/6000 Enterprise Server H50 lists at \$39,580.

Royal Bank to bundle**Internet service with banking**

TORONTO (NB)—The Royal Bank of Canada has announced a service that combines electronic banking with Internet access. Offered in co-operation with AT&T Canada Long Distance Services Inc., the connect@work service is aimed at small-business customers.

Connect@work includes access to the online banking services provided by the bank, which is Canada's largest and has recently proposed a merger with the Bank of Montreal. These services include bill paging, chequing account and loan balances, funds transfer, and the ability to review account transactions. Each of three available packages includes Internet access comparable to that offered by Internet service providers.

Joanne Wade, a bank spokesperson, said the basic package costs \$29.95, plus a \$50 setup fee, and includes 30 hours per month of Internet access, one email address, a local domain name, and a choice of Netscape or Microsoft browser software. Additional access is \$3 per hour.

The enhanced package provides unlimited access, one email address and four aliases, 5 MB of Web space, 30 MB of Web file-transfer capacity, local domain name, and optional global domain name registration for \$150 plus standard registration charges. It also provides access to the Small Business Resource Network, which includes a collection of business articles by small-business experts, dealing with such areas as accounting, marketing, and taxation. This package costs \$69.95 per month. The enhanced plus package adds another 10 MB of Web space, 60 MB of Web transfer capacity, 10 email addresses, and 10 aliases. The monthly fee is \$69.95, and the setup fee is \$70.

Contact: Royal Bank, <http://www.royalbank.com>**Balisoft debuts****with LiveContact for Net Talk**

TORONTO (NB)—Balisoft Technologies Inc., a startup company headed by Delrina Corp. co-founder Mark Skapinker, has entered the emerging market for technology that lets Web users talk to the companies whose Web sites they visit.

Balisoft's LiveContact allows a Web surfer to click an icon on the Web site and be connected, using voice-over-Internet technology, to a service representative. This is similar to a product launched recently by Northern Telecom Ltd., called Internet Voice Button. MCI Communications also recently launched a service called Click'n'Connect for its call center customers, and Sprint Corp. offers a similar service called Give Me A Call.

LiveContact uses client software that needs to be downloaded to the user's personal computer. It is free of charge from Balisoft's Web site at <http://www.balisoft.com>. As with most such offerings, the user needs a multimedia PC with speakers and a microphone. If the Internet is to be a sales medium, Skapinker told Newsbytes, "then you'd better have ways of having the traditional sales tools available. Sales tools are sales people, customer service people—people who can help you get through a transaction."

According to Skapinker, a combination of the Web with voice communications can do things neither can do on its own. Shopping on the Web is a bit like shopping in a world full of vending machines, without human contact, he said, and most people do not want to do that. On the other hand, an operator taking calls on a toll-free number for a travel agency can't show the caller pictures of a resort. The ability to use the Web to show images and video complements the audio conversation, Skapinker said.

Firms listed on TSE must report Year 2000 readiness

TORONTO (NB)—Companies whose stocks are listed on the Toronto Stock Exchange are now required to report to their shareholders on efforts to prepare their computer systems for the turn of the century.

Concern has become widespread now about the fact that many computer systems represent the year in dates with only two digits, which will cause them to confuse the year 2000 with 1900, possibly leading to serious errors. Experts say that companies not already well under way on correcting these problems may not have enough time left, and the impact could be serious or even devastating for some firms.

The Toronto Stock Exchange, Canada's largest exchange, sent a letter to listed companies recently, advising them that they must include material information about the implications of the Year 2000 problem for their information systems and their businesses in annual reports mailed to shareholders after April 1 of this year. It also urges that such information be included where possible in reports issued before April 1.

The TSE's requirement is the first such directive by a Canadian stock exchange, said Ralph Shay, vice-president of company listings and regulation, and may be the first in the world. Shay said he did not know how many TSE-listed companies have already included Year 2000 discussions in their financial reports, but "my guess is very few."

Maximizer Enterprise 4.0 introduced

VANCOUVER (NB)—Maximizer Technologies Inc. has introduced Maximizer Enterprise 4.0, which combines contact management with an opportunity management system and group security. Maximizer Enterprise was first released in 1995 as a sales force automation product.

The company says the opportunity management system prompts the user through a series of questions to develop a customized strategy for each type of opportunity the organization encounters, generating management support information and acting as a lead distribution system. Version 4.0's group security features allow all users to share one company-wide database, with a database administrator controlling which users and groups have access to what information.

The single user price of Maximizer Enterprise 4.0 is \$249.95. Existing Maximizer users (versions 3.0, 3.0is, and 97) can upgrade for \$79.95 until March 31.

Contact: Maximizer, <http://www.maximizer.com/>**Smart and Friendly introduces high-speed CD-ROM towers**

CHATSWORTH, Calif. (NB)—CD-ROM servers

Continued on page 91

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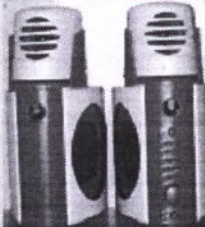
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Projections and prognostications

TCP's guide to presentation hardware and software

BY ROSS MACDONALD

A noticeable change in the products released by a large number of hardware manufacturers is the proliferation of projectors and large-screen monitors specifically geared to business presentations. Notably absent, however, is any push for the transparent LCD (liquid crystal display) panels of previous years. I've discovered that this is largely because that technology is already in the final throes of obsolescence.

Investigation into this new trend revealed that the growing interest in presentation technology directly correlates to the proliferation of notebook computers. It has become more and more possible, as well as affordable, to both create and show impressive computer-generated presentations without being particularly skilled in the art.

Where permanent presentation rooms have long been common in the corporate world, the massive power of diminutive computers, when combined with the newer, smaller, cheaper projectors, has made the presentation of (ummm...) presentations practical for smaller businesses and, of course, those on the road.

If you want people to buy what you're selling, this rudimentary guide should help you get the right gear for the maximum impact.

Hardware

"At the very basic level, presentations began with slide projectors, the benefit being that there isn't much technology involved so you're a lot less likely to encounter Murphy's Law," says James Chan, product manager of flat panel and presentation systems for ViewSonic Corporation. "Of course, your slides might get out of order, but that's about it. On the other hand, slides are pre-prepared, which limits your ability to make ad hoc presentations or presentations that are customized to a certain client."

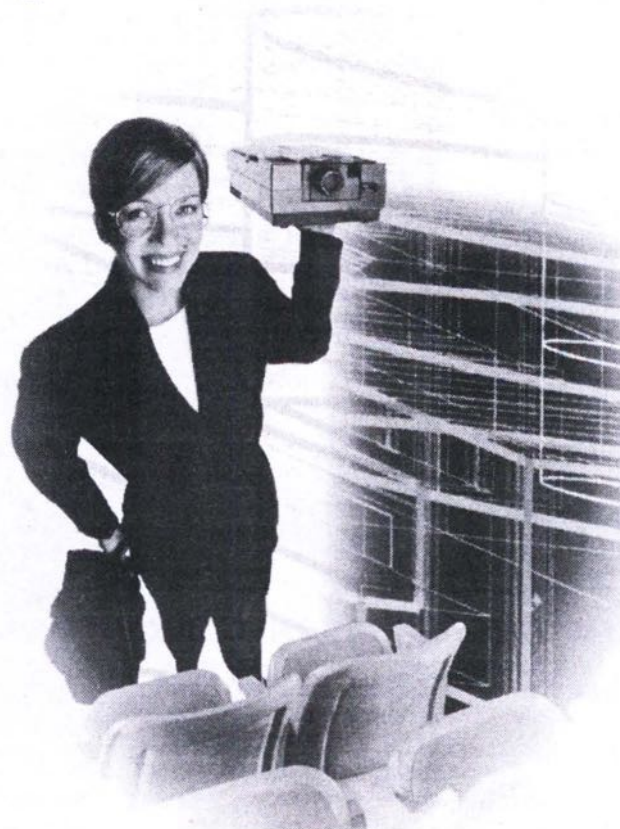
Which is why overhead projectors and transparencies have generally been more popular than slides—transparencies are quite simply better for customizing the show because you can write directly on them while talking to highlight information or tailor the main points specific to your audience.

LCD panels

Which is where Chan recalls transparent LCD panels coming into the picture. These are similar to the LCD screens you'll find on portable computers, but without a backing so that they can be placed onto an overhead projector to display any computer-generated images you've created.

"When LCD panels first came out," says Chan, "there was a very good market for them because people quickly realized the benefits and flexibility of being able to create presentations on their computers. That's when PowerPoint and other presentation software packages started to really tap into the momentum of presentation technology."

LCDs don't create "active" light, which is why it's necessary for portable computers to incorporate a back-lighting system. The



bulb in an overhead projector serves the same function for the transparent presentation panel displays.

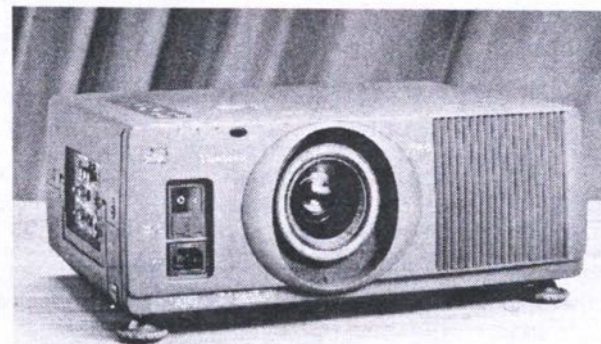
Besides price (approximately \$1,500 and up) the main advantage to LCD panels is their weight and portability—they're just as small, thin and light as notebook screen. The major disadvantage, however, is a poor brightness level due to the fact that overhead projectors were designed to project light only through a thin transparency sheet. Brightness is lost when that same light is broadcast through the two sheets of glass and the liquid crystal compound of an LCD panel.

Standard overhead projector lamps just aren't powerful enough to provide a bright, sharp, clear image onto the screen. Of course, if you opt for an LCD panel, you have to count on an overhead projector being available wherever you're going. Either that or you must plan to carry one around with you.

The advent of lower-cost projectors means LCD panels just aren't an ideal solution any more for someone on the move who wants to make presentations. This is why LCD projectors are replacing LCD panels in the market.

Among the advantages—in addition to the fact that projectors are entirely self-contained units—is that projectors are processing the primary image first hand. What gets to the screen is first generation right out of the computer, so the image is sharper, clearer and brighter.

LCD projectors

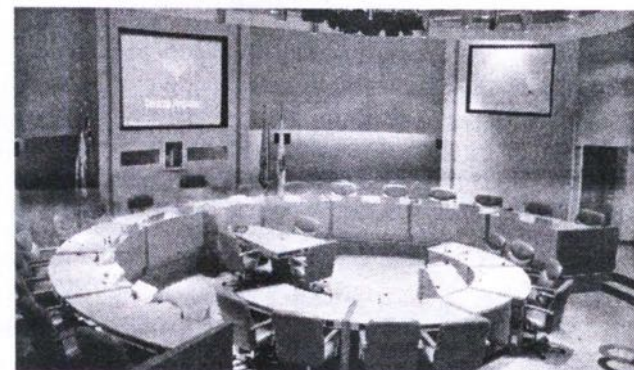


LCD projectors come in two basic flavors: an economical single panel and a higher cost three-panel configuration. Single panel projectors work on the same principal as the LCD panel, but with the overhead projector built right in. Inside the projector is a tiny LCD panel (0.9-1.3 in. sq.) on which the computer-generated image is created before being projected through a magnifying lens by a powerful lamp. The three-panel type works much the same way but has individual panels for the creation of the separate primary colors (Red Blue Green), which are combined into a single image by mirrors before being projected by the lens and lamp.

LCD projectors have the advantages of being small, light and self-contained, while producing very sharp, clear, colorful images. Of course, the three-panel LCDs produce better results on all counts. Price-wise, single-panel models begin at about \$3,000 while three-panel projectors will start around \$5000 and go up.

So far, your choices seem relatively simple: a transparent LCD panel for about \$1,500 (cheap, light, portable, but relatively poor picture quality and requiring an overhead projector wherever you go); a single-panel LCD projector for about \$3000 (affordable, light, portable, good quality picture); or a three-panel LCD projector for about \$5000 (still light and portable and with excellent quality picture).

But, of course, just to muddy things up, engineers have come up with yet another alternative, this time based on a completely different technology—the DLP projector.



DLP projectors

DLP (digital light processing) projectors are based around a chip called the DMD (digital micromirror device), which was developed by Texas Instruments. This chip has millions of micro-mirrors built directly onto it, with each mirror representing an image pixel. The mirrors turn a certain way to reflect or deflect light as instructed by the computer to form the image.

The advantage is that, being reflective technology, the image is usually brighter while, being chip based, the technology is smaller and lighter than LCD. However, being relatively new, there's a lot of research and development costs to recover so the entry-level price is going to be much higher than that of a three-panel LCD projector (that means about \$US\$9,900 and up to start).

It's Chan's opinion that three-panel LCD projectors have better color reproduction than DLP because the latter's reflective nature causes some loss of color saturation. Brightness, however, remains superior over LCD and the color loss is said to be negligible.

Brightness matters

"The main determinant about the size of any projector is the

Continued on page 85

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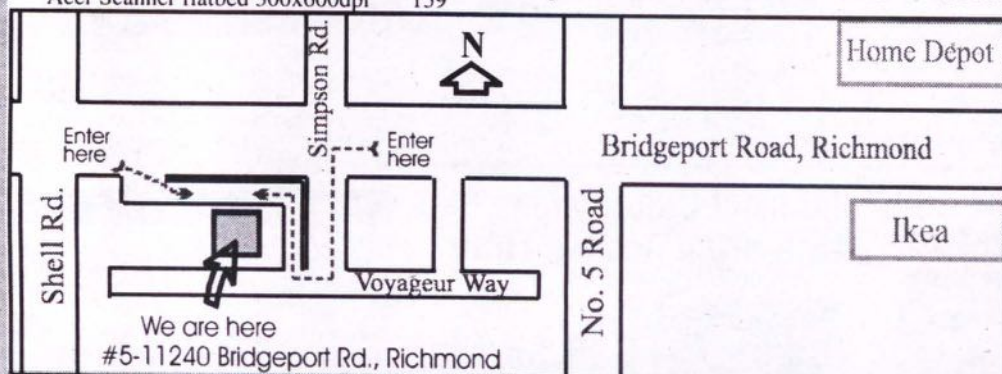
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Small Business Computing

Projections and prognostications

Continued from page 82

size of the lamp," says Chan, "and that's a factor to be considered when choosing a projection system because the size of the lamp determines how bright your projected image will be in a variety of environments."

Different companies describe the brightness capabilities of their projectors in different ways, but a good tip is that brightness should be expressed in units called ANSI lumens. This is an industry-accepted standard that will allow you to make a linear comparison between models. The higher the ANSI lumen number is, the brighter the image will be in larger and/or more brightly lit rooms.

Though it's a measure that's difficult to imagine without a visual comparison, it's fair to say that 400 ANSI lumens is adequate for a normally lit conference room with a seating capacity of 10 to 12 people. A classroom situation might require 500 to 550 ANSI lumens. A large, ballroom-size conference room might require a projector capable of 1,000 ANSI lumens or more.

But, where it might seem logical to simply go for the brightest possible projector, size, weight and especially cost all rise almost exponentially as brightness ability increases. That means you're better off to determine which projector best suits your current needs and budget than to go for the brightest available within that range.

Shopping tips

According to Chan, there are three essential things to consider when buying a projector.

- **Resolution:** Determine if the projector is capable of SVGA or XGA, and which one you require. SVGA (600x800) is more than sufficient for use with an older notepad as most are only capable of that resolution. XGA (1,024x768) is generally only available on newer portables. It's interesting to note too that most SVGA machines can do a compression routine that allows 1,024x768 resolution to be displayed. A lot of presentation software is resolution independent anyway so that, when you go into slideshow mode, the slides are full-screen regardless of the resolution setting. But resolution makes a big difference in price. An SVGA projector will run from \$2,000 to \$6,000, an XGA projector will start at \$10,000!
- **Brightness:** The type of presentation environment you're working in and how much control you have over it determines how many ANSI lumens you'll need. Of course, it's easy to figure out when you're always making presentations in the same room of an office, but those on the road will have much to consider when trying to balance brightness against cost, size and weight.
- **Weight:** Which, conveniently, is Chan's final important factor. Do you travel a lot? Are you going to use it primarily in the office? Are you going to mount it in the ceiling? Do you travel by plane? Are you going to be moving from sales call to sales call? These are all things to consider. But, as we've covered, this has to be evaluated with respect to the other factors because projectors with greater brightness absolutely must have the bigger, heavier lamps. Projectors are commonly categorized within three weight classes: ultra portable at 4 kg (9 lb.) and under, portable

at 4-6.75 kg (9-15 lb.), and anything greater than 6.75 kg (15 lb.) is called a desktop projector—which makes a lot of sense because heavy hitters weigh in at about 14.5 kg (32 lb.).

Lance Bailey, marketing and business development manager for NEC Technologies Canada offers a few other tips when shopping

for this technology:

"Number one is image clarity and quality and the edge-to-edge image focus. That's extremely critical because obviously the primary objective is to get that image in a viewable format that your audience can comfortably see. Also, the feature set of any projector—built-in mouse control, for example, or zoom features—ought to be practical and

functional, of course. But more important than that, they have to enhance your ability to present or they're just useless."

Another shopping tip from Chan is not to count on the salesperson to tell you what you need "because when you talk to a salesperson you need just about everything he can sell you." In other words, determine what size of

Continued on page 87

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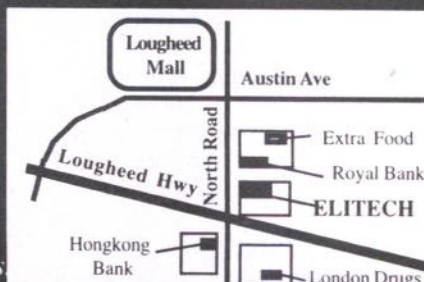
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Small Business Computing

Projections and prognostications

Continued from page 85

projector you need, what resolution you need and what brightness you need, even what type of projection device you want, before you hit the stores.

Finally, it's very easy to buy a projector these days because they're available in so many places but, if you buy from a computer retailer, you can generally expect to get a better deal. Conversely, buying through the audio visual specialty outlet will give you access to a higher level of product knowledge and service because AV specialists know all about assembling an ideal presentation environment in an office situation. But, if you're just looking to buy a portable projector, you'll likely get a better price from your local computer reseller.

Good ol' monitors

The alternative to projectors that you'll commonly encounter are very large screen monitors based on CRT (cathode ray tube), LCD or gas plasma technologies. CRTs, of course are the standard TV-like monitors we've all lived with for years. They're just making them bigger these days. LCD monitors are only now showing up in the large-screen category because improvements in the manufacturing process are enabling companies to offer bigger and bigger panels at more reasonable cost. But the grooviest of all, of course, are gas plasma screens.

NEC, producers of a 33-inch \$18,000 gas plasma display, has kindly provided this

backlighting to broadcast the image. The picture, ergo, is exceptional—as is the price.

The thing that all large-screen monitors have in common is a hefty price tag, albeit CRTs can be had within the same price ranges as many LCD projectors. Large LCD panel displays are comparably lighter and smaller and, like gas plasma displays, flat and light enough to be mounted on the wall if permanent

placement is what you have in mind. However, a 20-inch-plus LCD will cost thousands of dollars while a large gas plasma screen bears the same price tag as a new car (\$20,000 or more).

All in all, any of CRT, LCD or gas plasma monitors are going to be best suited to a permanent presentation environment of only limited size.

Creating the show

Where it wouldn't be practical to address all the presentation software packages available here, I was able to get a few tips from several people who specialize in such things. Contributions here are from: James Chan of ViewSonic (projectors and panels), Anne McKeon of Microsoft (PowerPoint) ➤

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Syquest 230m ptr-port zip... \$189*
Iomega zip ext-scsi-parallel plus... \$249*
Iomega zip int/ext oem... \$139, 189*
Zip-100MB disc oem/iomega... \$15, 18*
Imation ls-120 drive/disc... \$165, 25*
Epson combo 1.44+1.2 same drive... \$119*

Motherboards, CPU's, RAM

32m sdrum 10 ns... \$79*
Intel mx166/k6-166 cpu... \$159*
Intel mx200/233 cpu... \$199, 279*
AMD K6-200/233 cpu... \$195, 265

IBM-686-166, 200 cpu... \$109, 175
INTEL P-II 233, 266, 300... \$399, 525, 699*
Intel 440lx, w audio... \$249, 289
Acer pent-pro w cpu-180... \$399*
Asustek p197... \$159, 189*
Asus/Acer P2197/Sci... \$219, 339*
Asus dual-ix scsi 97DS... \$475
Supermicro dual-ix scsi server... \$599
Microstar pii-bx, tx... \$239, 139*
Gigabyte vpx, tx, pii-ls... \$119, 139, 239
Shuttle pii-ls, tx... \$229, 139*
Tyan tx, pii-ls, pii-ls dual... \$175, 375, 485
Abit vx, tx, tx, pii-ls... \$119, 165, 139, 229
Oem Tx-ultra 1 MB Cache best value \$115*
Pipeline cache 256/512k... \$19/29*

Video+ Capture

Sungray 3dl 28.6/8m... \$299, 349*
Voodoo 3 16m tv out... \$299*
Diamond gl 3d pro 8m... \$299
Monster 3d oem/box... \$209, 259
Viper 330/Agp oem/box... \$239, 279*
Viper 2m rampci/vlb... \$199*
Stealth 64-2m ram... \$199*
Stealth 2m ram tv... \$199*
Mystique ii 4m pci... \$139*
Studio runner 4 mystique... \$250*
Tv tuner for mystique... \$99*
Millennium 114m/8m pci... \$199, 339*
Ati experts@wvdk 8m... \$288*
Ati-experts@kx 8m... \$299*
Ati-3d pc2rv 2/4/8m... \$115, 149, 199
Ati-all-in-wonder pro 4M-8M... \$289*
Asus 4m agp tv-out... \$199*
Cirrus 4m agp... \$89*
S3-new 3d-4m pci... \$78, vlb \$79*
Micro 30+ de20... \$1199, 799
Xing stream-generator... \$10, 000

Multimedia, CD-ROM, DVD

24x cdrom toshiba, acer... \$79 up*
32 x cdrom from TOSHIBA... \$109*
24x scsi cdrom from... \$159
External cdrom case... \$99 up*
Sony gr2w scsi bare/kit... \$455/525
HP-philips-Mitsumi cd writer... \$525
Creative encore dvd drive... \$399
Creative infia1800+encarta... \$199*
Dvd-2 Toshiba & Decoder... \$339
Creative SB16/awc64/gold... \$59, 99, 239*
Creative SB16+ez-scsi... \$194*
Spectrum 16+scsi/f... \$175*

Audio, CD-ROM cable... \$5
Dragon-naturally-speak... \$399
Cdr-rwcd MEDIA CD... \$3, 25\$
Pnp-sound-16 card/FSS... \$35, 25\$

Printer (asci inkjet, thermal, JET, E-Color)

Epson 400, 600, 800... \$239, 339, 479*
OKI 4w, 600c... \$285, 499
Fujitsu 10v, 14v, 14adv... \$699, 859, 1099
EJ105 INKJET special... \$99*
Brother 730, 760c... \$459, 509
Brother 1060, 1660... \$589, 1079
Brother 4550, 6550, 7000 \$579, 1049, 1079
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Canon

Canon bj-240, 250, 80... \$195, 385
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HP officepro... \$1288
HP 6l, 6p, 6mp... \$515, 945, 1190*
HP 5, 5n, 5m... \$1380, 1490, 2390
HP 4v, 4m+4, 4mv... \$2455, 2600, 3545
HP color 5, color 5m... \$5480, 8999
HP designjet plotters... call

Keyboards, Mice

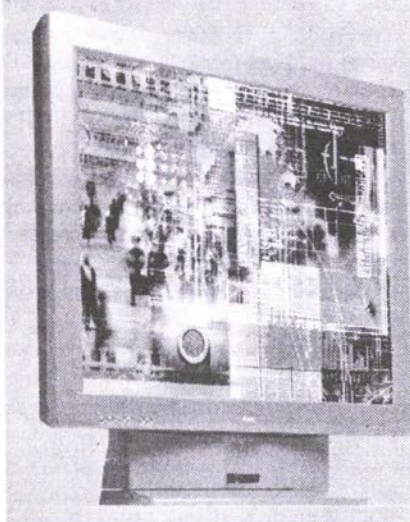
Win95 keyboard, Natural Wave... \$19, 45*
Chinese win95 keyboard... \$25 up*
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Chinones 3000 zoom... \$599*
Pictura hi-res demo LOGITECH... \$399*
Jvc 10k zoom gr-dvml tft... \$2888*
HP 5s, 5p, 6100c... \$269, 389, 1020
Microtek c36, pro... \$185, 395, 650
Umax 300p, 600s, 1200s... \$185, \$225, 685
Acer 310P, 310S, 610... \$175, \$199, 339*



explanation of gas plasma technology. It begins with a glass plate onto which a fine grid of raised ribs is applied. A coating of red, green and blue phosphor material is deposited into the spaces of the grid. Each set of three adjacent cells, one of each color, constitutes a pixel. A second glass plate is placed on top of the assembly, trapping a gas—either helium, neon or xenon—inside. Electrodes are embedded in the glass plates.

Selectively applying voltages to the electrodes causes the gas inside to discharge ultra-violet light, which in turn causes the phosphor to fluoresce, sending colored light out to the viewer. The individual cell structure and selective voltage technology enable the plasma display to produce even illumination and exceptional image quality at large-screen sizes.

Where that might sound very much like the way LCD works, the key difference with gas plasma is that it's an actual light emitting technology as opposed to the LCD, which requires

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presentation software), Mo Asgari of InMedia Presentations (Slides & Sound Plus multimedia presentation software specifically geared toward consumers, schools, etc.) and Lance Bailey of NEC Technologies Canada (projectors, notebooks, etc.).

Overall, you should be looking for a software package containing all the tools you need to organize your ideas, illustrate them,

then professionally deliver them. It goes without saying too (though I'll say it anyway) that it should be relatively easy to use because you want to focus your energies on figuring out the presentation, not figuring out the software. Also, you'll be looking for software with enough flexibility to shuffle your material around while keeping it organized in case you want to make several, or customized, presen-

tations that use some common materials.

Software checklist

- Make sure that, in "slideshow" mode, your presentation software will produce full-screen images regardless of resolution.
- Many software packages allow you to save your files as HTML (hypertext markup language) documents, which means you can

actually store your presentation on the Internet then tap into the site with your computer and projector from wherever you are. Or, even better, contact individuals to let them know they can view your presentation on the Internet through their own computers.

- Make sure your package integrates with others, or at least recognizes a wide variety of file formats to make the importation of outside materials at least possible if not altogether simple.
- It's nice if your software has lots of templates to get you going quickly.
- Another nice feature you'll find in some software is separate displays between what's showing to the audience and what you can see on your computer. That allows you to make notes to yourself or include additional information as reminders for your comments.

Presentation tips

- Don't try to put too much information on a single screen. Keep your text and graphics simple and limit yourself to four or five points per page.
- Use large fonts and typefaces and large, easy to read graphics.
- If you choose a package with lots of options for backgrounds and transitions (i.e., fade-outs, in from right, left, top, bottom, flip-outs, sound effects, etc.) don't try to dazzle your audience by trying to squeeze as many effects as possible in a single presentation. There's room for some variety in order to better engage your audience—you don't have to use the same background and transition through the whole show—but exercise some restraint.
- Don't underestimate the impact that the overall look (background, color scheme, effects, etc.) has on the effectiveness of your presentation. Compelling information poorly presented will not make as much of an impression as compelling information presented in a compelling way.
- Timing your presentation is very important. Some software incorporates a timing feature so you can practice getting it right, but you should practice timing anyway even if the package you choose doesn't have that feature. The most common problem here is the speaker going over time.
- It's crucial to have an agenda. Start with slides that include the speaker's name and an overall agenda of what will be covered by your presentation. Then pepper longer shows with slides that occasionally show where you are in that agenda.
- Ensure there's a logical connection between your slides. It is especially important to check this when you're shuffling materials among different presentations.
- Finally... stay on topic! □

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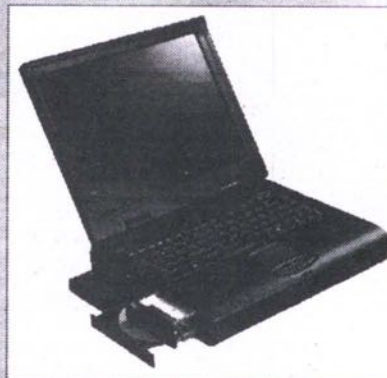
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Small Business Computing

Some good news for small business in budget



ON YOUR OWN
by Douglas Gray

The federal budget that came down on Feb. 24 did not contain too many changes that affect small business. However, there are some changes that may help your after-tax, take-home income in a positive way—some business-related some personal. Here is a brief

overview.

Some of the proposals are effective immediately, others at some come later in 1998 or the subsequent year. Make sure you obtain customized tax planning advice from your professional accountant, so you can strategically plan to take advantage of the changes that affect your situation.

Overview of some key tax changes

- The basic personal and spousal exemptions will each be increased by \$500 for single taxpayers with income under \$20,000 and for families with income under \$40,000. At present, the basic personal amount is \$6,456, while the maximum value for the spouse or equivalent-to-spouse amount is \$5,380. This measure

will come into effect on July 1, 1998. The implication here, is that you may be employing your children or spouse to help you in your business, which means you will be able to pay them \$500 more tax free money as long as they don't exceed the basic personal tax credits. That way you can keep more money in the family than before.

- The current federal surtax (extra tax), which is three percent of basic federal tax, will be eliminated on July 1, 1998 in certain situations. For example, if you are an individual earning up to \$50,000 you would be eligible. Beyond that income, it is reduced on a sliding scale.
- To promote new youth employment, employers will receive a holiday from employment insurance premiums for new employees age 18 to 24 hired in 1999 and 2000.
- Self-employed individuals will be allowed to deduct premiums for private health services plans (group or individual plan—health, dental, etc.) where they are actively engaged in the business and the business is the primary source of income or the income does not exceed \$10,000 from elsewhere. The deduction only applies if insurance coverage is also available to all full-time permanent employees who are

arm's length. In other words, the insurance coverage can't just be for your family and not your non-family employees. The deductible amount is limited to amounts paid to third-party insurers after the 1997 fiscal year in the amount of \$1,500 for the owner and his/her spouse and \$750 per child. No limit applies to amounts for arm's-length employees.

- Full deductibility of meals and entertainment expenses for events generally available to all employees (e.g. Christmas parties) will now be limited to six "occasional events" per year. Full deductibility for meals and entertainment expenses at remote work sites will be expanded to sites that are at least 30 km from the nearest urban centre of at least 40,000 people. Both the above budget proposals apply to expenses incurred after Feb. 23, 1998.
- Starting in 1998, the limit for deductible child care expenses will be increased from \$5,000 to \$7,000 for children under seven and from \$3,000 to \$4,000 for other eligible children.

More tax information on the Net

Here are some Web sites that could provide you with more detailed analysis of the recent budget proposals. The sites are the seven

largest chartered accountancy firms plus Revenue Canada:

- Revenue Canada: <http://www.revcan.ca>
- Arthur Anderson: <http://www.arthuranderson.com>
- BDO Dunwoody: <http://www.bdo.ca>
- Coopers and Lybrand: <http://www.colybrand.com>
- Deloitte Touche: <http://www.dttus.com>
- Ernst and Young: <http://www.tax.ey.ca>
- KPMG: <http://www.kpmg.ca>
- Price Waterhouse: <http://www.pw.ca>

As a reminder, make sure you obtain tax feedback from a qualified professional accountant, such as a chartered accountant or certified general accountant. Getting two or more opinions on tax-related matters is usually a prudent rule of thumb, even if you already have an accountant. Most initial consultations are free. Ask in advance. □

Douglas Gray, LL.B. is a Vancouver-based expert on small business. Formerly a practicing lawyer, he is now a consultant, speaker and author of 16 bestselling books, including *The Complete Canadian Small Business Guide* (McGraw-Hill Ryerson) and *Start and Run a Profitable Consulting Business* (Self-Counsel Press).

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Small Business Computing

Business briefs

Continued from page 80

are being used increasingly in corporate networking environments for storage. Now Smart and Friendly Inc. says it has begun shipping a line of 32x multi-read CD-ROM towers for large and small local area networks (LANs) and enterprise systems.

The company says its CD-ROM towers provide high-speed online storage for applications or data, and are configured with four, seven, or 14 multi-read drives. The towers include network CD-ROM software from Ornetix and MediaPath.

They include 10-user licences for CD-Vision and CD-Commander from Ornetix Network Products and 60-user licences for MediaAgent from MediaPath Technologies. CD-Vision reportedly creates a dedicated CD-ROM server on Novell and Microsoft networks, and improves network performance by off-loading all CD-ROM traffic from the main server and client workstations.

MediaAgent provides CD-ROM administration features and works independently of all network operating systems. A Microsoft Explorer plug-in, MediaAgent uses the Windows interface to give users icon-based access to any CD-ROM on the network as if it were a local drive.

Estimated street prices of the standard versions of the Smart and Friendly 32x CD-ROM network towers are US\$845 (four drives) and US\$1,325 (seven drives). The deluxe versions, which include locking doors, are priced at

US\$1,599 (seven drives) and US\$3,199 (14 drives). The towers are shipping now.

U.S. wants e-commerce addressed by international trade body

GENEVA, Switzerland (NB)—The international community needs to immediately start taking a long, hard look at electronic commerce, including backing off on imposing customs duties, the United States said at a meeting of the World Trade Organization (WTO) in February.

"Electronic commerce, and in particular the dynamic growth of the Internet, is already having a profound effect on how business is conducted," said U.S. trade ambassador Rita Hayes.

According to Hayes, WTO members could allow that growth, projected to reach some \$300 billion a year by 2000, by refraining from imposing taxes or border customers duties on worldwide e-commerce.

"Today, no member considers that electronic transmissions are important for customs purposes and, thus, no member imposes customs duties for electronic transmissions," she said. "Our proposal is to codify this practice in the WTO."

Although many of the world's developed nations in Europe, as well as Japan, supported Hayes' proposal, developing nation representatives expressed doubts about voluntarily avoiding a potential major source of revenue so soon. The fear, many developing nation diplomats said, was that the U.S. was attempt-

ing to promote U.S. business at the expense of developing nations' business.

Hayes, however, said the U.S. proposal would not limit the rights or abilities of nations to tax goods sold over the Internet. Hayes said that because no country—including the U.S.—currently imposes customs taxes on goods ordered electronically, the WTO would merely maintain the status quo.

WTO members agreed to continue studying the US proposal and its implications.

ISS unveils automated network defence package

WATFORD, U.K. (NB)—Internet Security Systems (ISS) has unveiled RealSecure 2.0, a major update to its intrusion prevention and detection package.

The software, which was unveiled at the 1998 RSA Data Security Conference in San Francisco recently and is now available through the company's U.K. and U.S. operations, is claimed to offer round-the-clock network monitoring to enable users to intercept and respond to potentially devastating security breaches and internal network abuse quickly and easily—before systems are compromised.

Kevin Black, ISS U.K.'s managing director, said the software now includes a new and enhanced architecture for a faster, more comprehensive ability to detect and stop network abuse. He said RealSecure 2.0 is analogous to an "intelligent" CCTV security camera. "It provides a critical layer of protection that

complements static security technologies such as firewalls, and ensures that users' networks are protected across all devices and layers of the enterprise. RealSecure 2.0 offers unattended monitoring of—and protection for—all network devices, with no discernible effect on network performance," he claimed.

New RealSecure 2.0 features include: new attack signatures, including attacks based on RIP, SNMP (Simple Network Management Protocol), and Windows NT vulnerabilities; Fast Ethernet and Token Ring support; user-defined responses; built-in encryption and key-based authentication; multi-tiered management consoles; incident response online help database; Check Point Firewall-1 automatic reconfiguration option; SNMP support; and, streamlined policy update capability.

RealSecure 2.0 sells for US\$5,500 for a single perpetual license supporting Ethernet and Token Ring.

A version of RealSecure 2.0 for Sun Solaris and Linux is expected to start shipping in March.

Contact: ISS, <http://www.iss.net>

Files, Dudes! • NB—Hey dudes! The FileDudes Web site provides information and links to software in many categories for the Windows 95, Windows 3.x and Macintosh operating systems. If you feel like sampling some random software, you can choose the what's new section or high-tide random link of the day. Web site: <http://www.filedudes.com>

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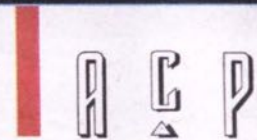
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TCP Labs looks at under-\$1,000 laser printers



BY STEVE HALINDA

It seems 1997 was the year nearly everything became affordable, or at least, more so than they had been, and the trend seems to be continuing in 1998. We've seen prices plummet on nearly everything the computer industry has to offer.

Take RAM and hard drive prices for instance: today, you can buy 32 MB of either EDO or SDRAM for your computer and you'll pay less than \$90. As for hard drives, it's been only two years since we tested the very latest 1.2 GB drives which, at the time, were considered so roomy that it was hard to imagine ever running out of space.

Today, we're seeing average hard drive capacities of 3.2 or 4.3 GB, while the latest generation of 8.4 GB models sell for just over \$500. We're also seeing video cards with 8 MB RAM, CD-Recordable drives selling for under \$500, 120 MB floppy drives becoming the PC standard—and the list goes on and on.

Where will it end? It won't! So if you're waiting for just the right time to make a purchase, forget it. You might as well just buy it today and enjoy the benefits and stop thinking about the fact that six months from now it'll be half the price. And don't lose any sleep over knowing that one year from today, there will be something newer and better on the market, because we all know it's true and every bit as predictable as the setting sun.

The fact is that because technology is moving at such an incredible pace, it's next to impossible to keep up unless you have more money than you know what to do with, or you happen to work in *The Computer Paper's* Test Lab.

This month we look at another great example of technology that has become so affordable that every home and small business will be using it as often as they use the fax machine. Indeed, the laser printer has become not only affordable, but an indispensable tool that can save you time, money, and even a lot of suffering.

The basics of buying a laser printer

Buying a personal laser printer should be treated no differently than buying any other piece of hardware for your PC. You're looking for reliability, price/performance and overall quality. The good news is you don't have to be a computer expert to buy a good laser printer. All it takes is a little bit of research (which you're already doing), a bit of comparative shopping, and of course, some of your hard-earned money.

The models we review this month range from very basic models to units with lots of bells and whistles. All offer something to meet the individual needs of your home or small office. If you're on a tight budget, you'll find the Okidata 4w, which offers 600 dpi (dots per inch)-class output, an average speed of 4 pages per minute (ppm) and sells for around \$299 on the street. If you're looking for something with a little more zing, the Fujitsu PrintPartner 10v offers 600 dpi output at 10 ppm for roughly \$750. No matter what your budget or needs, there's something in this month's roundup of printers that is sure to please.

Just like a PC

Much of a printer's performance will depend on its internal design and engineering, just as your computer depends on its own makeup of components. A laser printer has a CPU, its own RAM, and a performance factor that is generally a combination of the two.

The CPU inside a laser printer is commonly referred to as the raster image processor, or RIP. This processor is responsible for "rasterizing" the image that you want to print. This process involves communication between your computer and the printer's RIP. Basically, the computer sends all of the required image details to the image processor, which translates that image into a pattern of dots (called a bit-image) before it is printed.

This bit-image is like a blueprint of whatever it is you are about to print. It's actually quite a feat for the printer's processor to complete this task, considering that it has to plan out the entire image to be printed and must know the exact number and positioning of each and every dot that will be put onto the paper. As you can probably guess, the RIP inside a printer will play a significant role in determining the printer's overall speed.

Depending on the printer, its internal processor can range anywhere from 12 MHz in the average consumer-oriented product, up to 66 MHz RISC processors in network lasers. The printer's processor will also determine how long you have to wait before your first page begins to print after you've pressed the print button.

A printer with a more advanced processor will begin printing even the most complex documents in just a few seconds. For the most part, if what you're printing consists mostly of text, this really won't be an issue since every

printer has enough processing power to handle simple tasks.

The only time you should be concerned about getting a unit with a more advanced processor is if you frequently print large documents that contain both text and graphics, or simply graphics alone. But for the average user or small office where letters, reports and the odd charts are being printed, any one of the models we reviewed this month will do the job quite admirably.

If you're really curious as to what processor is inside the printer, you may be able to find it on the manufacturer's Web site under the technical specifications for your printer, or in the manual. This tends to be the case mainly with high-end networkable lasers where the printer's processor is highly relevant, and not so much with entry-level models.

When deciding on the speed of your future printer, try not to concern yourself too much with the processor, since you will seldom have a choice. Be glad that the printer has a processor at all, saving your PC's processor from having to do even more work. For a home or small office, a printer capable of printing at 4 to 6 ppm will serve you just fine. Anything beyond that and you can expect to pay a premium, although not nearly as much as a few months ago.

As mentioned earlier, the Fujitsu PrintPartner 10v is a great example of a 10 ppm printer for just over \$700. If you know for a fact your printer will be used a couple of times a week, get something that can do 4 ppm. If you'll be printing quite a few times a day, you may want to consider something in the 6 ppm range. Or, if your printer will be part of a small office or shared among several PCs, go for something like the PrintPartner 10v.

Memory needs

Once again, your printer resembles your PC in the way that it uses RAM to store the rasterized image before it will be printed. Some printers, through their bundled software and drivers, will make use of your computer's RAM for storing this information, while others rely on their very own stockpile.

And although RAM prices for PCs have plummeted, this does not necessarily hold true for the printer market. Some of the newer printers use standard SIMM modules, while others rely on proprietary modules. If at all possible, you should get a printer that can accept standard SIMM modules since prices are so incredibly low right now that you can outfit your printer with 32 MB for under \$100 (assuming your printer can handle that much RAM).

It wasn't long ago that printers with 16 MB were found only in publishing houses and imaging shops. Today it's a totally different story. To determine how much RAM your printer should have, you once again have to base your decision on what the printer will be printing most often. If it's simply a matter of printing letters and reports, then 1 or 2 MB

Continued on page 95

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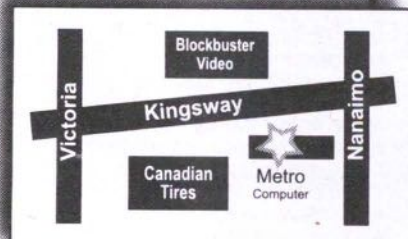
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TCP TEST LABS

should do just fine.

However, if your needs include documents that have a mix of text and graphics, you'll want to consider getting a few additional megabytes. But once again, beware! If the printer you're considering does not support standard SIMM modules, you could be looking at spending several times the amount per megabyte.

Some printers available today will have some form of memory management built into the printer. This commonly involves using data compression techniques in order to minimize the amount of raw data needed to be stored in the printer's RAM. This can be a lower-cost alternative to reducing the total memory the printer will have, especially if the printer requires proprietary memory modules. Hewlett-Packard uses something called memory enhancement technology (MEt) to describe its memory management technique.

Lexmark printers, on the other hand, use their own RAMSmart intelligent memory management. Similar implementations are also available from other manufacturers under various names.

Printer resolution

Just as megahertz are used to measure a processor's speed, dpi is used to measure a printer's output quality, or resolution. Basically, the higher the resolution, the better the printout quality will be. Although modern laser printers can achieve resolutions of 1,200x1,200 dpi, they are considerably more expensive than the models we reviewed in this month's roundup.

A good resolution for a laser printer is known as true 600 dpi. Whenever a printer is said to be "true 600 dpi" it means the printer can place a total of 600 times 600 dots, or 360,000 dots in one square inch. If the unit is advertised as being "600 dpi-class" it means it makes use of resolution enhancing technology to smooth out edges to give the image a sharper overall appearance.

The resolution of a printer is important because it determines just how good the printout looks. Let's say that you print an image on a 300 dpi and a 600 dpi printer. The image printed at 600 dpi will have four times the number of dots as the image printed at 300 dpi.

Why is that important? Because everything your printer gives you is made up of dots, so the more dots that go into producing an image on paper, the more detail you can see and the better the overall quality of the printout. You'll notice a considerable difference when printing graphical images, but as far as text goes, it would take a trained eye to tell the difference between a letter printed at 300 dpi or 600 dpi. Since most 600 dpi lasers are so inexpensive today, the only reason you should settle for a 300 dpi model is if you're really tight on cash.

Other things to consider

Another important consideration before buying a printer is the cost of consumables. This includes not only the obvious things, such as paper, but also the costs of toner and/or drum units.

Each printer model will have a specific type of toner cartridge that can cost anywhere from \$49 to \$150. Most cartridges are designed to print at least 2,000 pages at an average yield of five percent coverage. Others will print as many as 5,000 pages, but at a

price. For the most part, drum life isn't really a concern with the printers we reviewed since the drum and toner cartridge are purchased as one unit in most of these models.

Aside from consumables, you may also want to consider getting a printer with more than one paper tray. If you frequently print on regular letterhead and labels at the same time, it can quickly become a nuisance if you to switch back and forth using one paper tray. An

additional paper tray, which can hold from 100 to 250 pages, may cost you a few bucks, but it can be a worthwhile investment.

The bottom line

Shopping for a laser printer should not be a painstaking event, nor should you lose any rest over the matter. When you really think about it, the number of important things to consider is not at all overwhelming. You have

to basically decide three things:

- how fast the printer should be,
- what resolution you need,
- and how much you want to spend.

We recommend the following. If you can spend the additional cash, go for a printer that can handle 6 ppm. Although you may not think you'll need it, you never know how your needs might change in a few months.

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recommend getting a unit that can handle true 600 dpi printing. Although the resolution enhancement used in some printers can help a great deal for 300 dpi printers, it's still not quite the same as looking at a document printed in true 600 dpi.

As far as price goes, this month's survey clearly shows there are great quality printers out there for as little as \$400. If you feel your needs are somewhat more demanding, there's even a 10 ppm unit for around \$750. With a bit of planning and shopping around, you could quite easily end up the proud owner of your very own laser printer capable of making sharp printouts you once only dreamed about.

Our contenders

This month, we asked manufacturers to send us what they would classify as personal laser printers for either home or small office use. Our only requirement was that the printers should have a street price of \$1,000 or less. We received a nice assortment of models ranging from 4 ppm units all the way up to 10 ppm, using resolutions all the way up to 1,200 dpi-class. No matter what your needs may be, there's bound to be something that will catch your eye in this month's roundup.

Brother HL-1060



If your needs are more demanding than those of a typical home or small office user, Brother had you in mind when it designed the HL-1060. It features an impressive resolution of 1,200x600 dpi, and can handle up to 10 pages per minute using its RS3041 20 MHz processor. It comes standard with 2 MB of RAM that can be expanded to 34 MB using standard SIMM modules.

Thanks to Brother's own Advanced Photoscale Technology (APT), the HL-1060 can deliver 1,200 dpi-class output. With two input trays capable of holding 200 sheets of paper each, you won't have to do as many paper refills as you would with other printers. One of the most impressive features of the HL-1060 is its straight paper path, which greatly reduces crumpling on virtually any media type. The toner is good for about 2,200 pages and cartridges cost roughly \$45. The estimated street price on the HL-1060 is very competitive at \$699, making it an ideal choice for a small office environment.

Fujitsu PrintPartner 10v

One of the most impressive machines in this month's survey is the PrintPartner 10v from Fujitsu. It offers all the benefits of more expensive machines but is priced to be affordable by small offices, while still not entirely out of the reach of most home users.

Based on the SPARC Lite 20 MHz proces-

sor, the PrintPartner 10v can print at up to 10 ppm at a maximum resolution of 600x2,400, placing it into the category of 1,200 dpi-class.



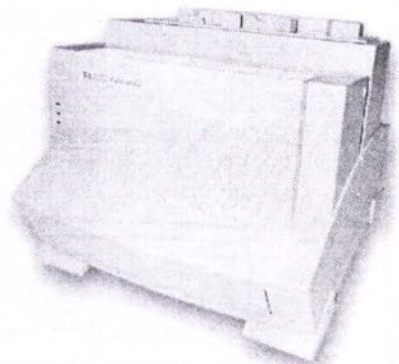
The user can also configure it to print at either 300 or 600 dpi when the 1,200 dpi-class resolution is not required.

With 3 MB of RAM standard, most print jobs will be handled very well, but should your needs be more complex, you can expand the machine to a total of 67 MB with industry standard SIMMs. This can be a great option, especially for small office environments.

The standard input tray can accommodate 250 sheets, but with the optional trays available, you can increase that to a total of 850 sheets. The parallel interface comes standard with the 10v, but there is optional support for either serial, Ethernet or LocalTalk connections. Toner cartridges are rated at 5,000 sheets and can be purchased for only \$50. Since the toner and drum units are completely separate, you'll only have to replace the drum unit after approximately 30,000 printouts.

The PrintPartner 10v is a very impressive machine that sells for \$730. It comes with an unmatched 18-month warranty, with the first year being on site.

Hewlett Packard LaserJet 6L



Replacing the popular LaserJet 5L is the new 6L. It offers pretty much all of the features of the 5L, with some additional enhancements. The 6L is a true 600x600 dpi printer, capable of printing at 6 ppm with the help of its Motorola 68030 24 MHz processor.

It has a standard complement of 1 MB RAM, upgradable to 9 MB using proprietary HP memory modules. The typical warm-up time associated with most laser printers is not something you'll have to worry about thanks to HP's patented instant-on fuser. Thanks to HP's Resolution Enhancement technology (REt), your documents look even sharper. The 6L also has 26 built-in fonts, supports PCL5 printing and has a standard 100-sheet paper tray.

A standard toner cartridge is good for roughly 2,500 sheets, and costs approximately \$96, and that price includes a drum unit.

LASER PRINTERS UNDER \$1000

Brother HL-1060

Fujitsu PrintPartner 10V

Hewlett-Packard LaserJet 6L

Lexmark Optra E+

Okidata Okipage 4w

Okidata Okipage 4e

Xerox DocuPrint 4508

Max resolution (dpi)	1,200x600	600x2,400	600x600	600x600	600 dpi class	300x1,200	600x600
Max rated speed (ppm)	10	10	6	6	4	6	8
Processor	RS3041 20 MHz	SPARC Lite 20 MHz	Motorola 68030 24 MHz	AMD 29205 16 MHz	NA	MIPS R3000 25 MHz	Motorola MC68322 20 MHz
Memory (standard/max)	2 MB/34 MB	3 MB/67 MB	1 MB/9 MB	2 MB/6 MB	128KB/128KB	1 MB/18 MB	2 MB/34 MB
Accepts standard SIMMs	Yes	Yes	No	No	NA	NA	Yes
Interfaces (standard)	Bi-directional parallel	Bi-directional parallel	Bi-directional parallel	Bi-directional parallel	Bi-directional parallel	Bi-directional parallel	Bi-directional parallel
Interfaces (optional)	Serial	Serial, Ethernet, LocalTalk	None	Serial, Ethernet	None	None	Serial
Resident fonts	49	45	26	26	None	45	46
PCL/Postscript support	PCL5e/BR optional	PCL 5e/PS optional	PCL 5/None	PCL 5/Optional PS	PCL 4.5/None	PCL 5e/None	PCL 5e/None
Standard paper capacity	400 sheets	250 sheets	100 sheets	150 sheets	100 sheets	100 sheets	250 sheets
Paper sizes	Letter, legal, envelope, labels, executive, transparencies, A4, A5, B5	Letter, legal, envelope, labels, executive, transparencies, A4, A5, B5	Letter, legal, envelope, labels, executive, transparencies, A4, A5, B5	Letter, legal, envelope, labels, executive, transparencies, A4, A5, B5	Letter, legal, envelope, labels, executive, transparencies, A4, A5, B5	Letter, legal, envelope, labels, executive, transparencies, A4, A5, B5, B6	Letter, legal, envelope, labels, executive, folio, transparencies, A4, A5, B5
Toner/drum separate	Yes	Yes	No	Yes	Yes	Yes	No
Cartridge life (pages)	2,200	5,000	2,500	3,000	1,000	2,000	5,000
Duty cycle (pages/month)	NA	35,000	6,000	10,000	1,000	6,000	8,000
Dimensions WxDxH cm (inches)	40x43.9x27.42 (15.8x17.3x10.8)	37.5x38.3x24.8 (14.8x15.1x9.8)	33.5x31.2x22.6 (13.2x12.3x8.9)	34.7x24.6x21.8 (13.7x9.7x8.6)	30.9x19x14.9 (12.2x7.5x5.9)	32x36x16 (12.6x14.2x6.3)	36x36.5x18.2 (14.2x14.4x7.2)
Price	\$699	\$730	\$520	\$590	\$299	\$420	\$649 SRP
Cost of toner cartridge	\$45 SRP	\$50 SRP	\$96	\$95 SRP	\$39.80 SRP	\$44.75 SRP	\$98 SRP
Cost of drum unit	\$270 SRP	\$275 SRP	—	\$130 SRP	\$165 SRP	\$262 SRP	—
Warranty	1 year	18 months	1 year	1 year	1 year	1 year	1 year
Contact	800-361-6466	800-263-8716	800-387-3867	800-358-5835	800-654-3282	800-654-3282	800-349-3769
Web site address	www.brother.com	www.fujitsu.ca	www.hp.com	www.lexmark.com	www.okidata.com	www.okidata.com	www.xerox.com

Note: All prices shown are street prices or estimated street prices, unless otherwise indicated.



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Priced at about \$520, the 6L comes with a one-year Express Exchange limited warranty on parts and labor, which ensures next-business day replacement.

Lexmark Optra E+



It's no secret that the Optra E series of printers are a particular favorite here at TCP Labs. The excellent design, small footprint and superb print quality all combine to make this printer an ideal choice for both home or small office. The all new E+ continues in the Lexmark tradition of offering true 600x600 dpi printing and can do so at 6 ppm with the help of its AMD 29205 16 MHz processor.

The Optra E+ has 2 MB of RAM—1 MB more than its predecessor, the Optra E. That can be further upgraded to 6 MB using proprietary Lexmark memory modules. A parallel interface is standard on the unit, while serial and Ethernet are available as options.

Standard issue with every Lexmark printer is the MarkVision print management utility.

With MarkVision, the user control of various printer functions in a well laid out graphical interface under Windows 3.x or Windows 95. Here you can monitor printer status, fine tune certain settings and toggle various options on or off. The toner cartridges are good for around 3,000 pages, while the separate photoconductor unit is good for up to 20,000 prints.

Thanks to recent price cuts by Lexmark, the Optra E+ has a suggested retail price of \$590, and comes with a standard one-year LexExpress warranty.

Okidata Okipage 4w



We first saw the Okipage 4w around this time last year when the product was introduced. Our immediate reaction was "wow, that is one small printer!" The same thing happened this time around once we unpacked the unit. It's amazing to think of how much work goes into designing a laser printer, and even more so when you look at something as small as the 4w.

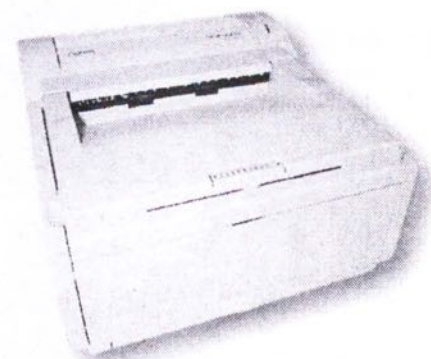
Although the 4w lacks any built-in support for PCL emulation, you still have access to any number of fonts within Windows 3.x or Windows 95. Support for DOS applications is also provided, although you must be in the Windows DOS prompt to use it. Considering the fact that this printer can be found for \$299, it's an excellent value for someone looking to add a small laser printer to their home or small office.

Technically speaking, however, Okidata printers use LED (light emitting diode) technology rather than laser light to imprint the image onto the paper, but you'll never know the difference when comparing printouts. Output from the 4w looked excellent, with solid black text remaining sharp even on the smallest of fonts. Since the 4w has a limited 128 KB of built-in memory, it will rely on your PC's memory supply to handle more complicated print jobs. With an average street price of \$299 and a limited one-year, overnight exchange warranty, the Okipage 4w is very hard to resist.

Okidata Okipage 6e

The successor to the OL600e in Okidata's line of LED printers is the model 6e. It offers an excellent price/performance ratio, not to mention some pretty impressive design specifications.

The 6e is considered a 1,200 dpi-class machine, capable of printing at a maximum resolution of 300x1,200 dpi. With a standard RAM complement of 1 MB and a MIPS R3000 25 MHz processor, the 6e can sustain print



speeds of 6 ppm, and can be expanded to a total of 18 MB.

Print quality on the 6e was quite good, delivering sharp text and well balanced gray tones in graphical images. The toner cartridge is good for roughly 2,200 pages and costs about \$40. As with its 4w cousin, the 6e comes with a one-year, overnight exchange warranty. With an average street price of \$420, the Okipage 6e is ideal for both home and small office environments.

Xerox DocuPrint 4508

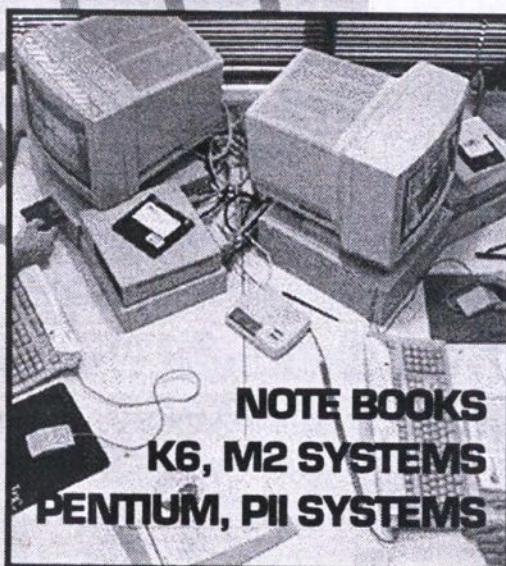
The DocuPrint 4508 from Xerox is another machine that we first saw around this time last-year. The printer itself hasn't changed, but the price sure has! In TCP's March '97 personal laser printer survey, this unit had a suggested retail price of \$999. Today, the same printer has a list price of \$649, a drop of \$350.

We gave it rave reviews last year with its

Continued on page 100

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Internal 33.6 Fax/modem
Windows 95 Release 2.0n
15" tower case 230 watt

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Asus board, 512K cache
3.2G Hdisk, 1.44mg Flpy dr
32 meg EDO, 33.6 Fax/Modem
24x CD-ROM, 2 meg SVGA
15" NI Low Rad SVGA Monitor
Win 95 keyboard, Mouse
16 bit 3D Sound, Speakers
Windows 95 Release 2.0n

\$1389

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Hewlett Packard

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HARDWARE

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Portege 300CT

From: Toshiba of Canada
800-387-5645, <http://www.toshiba.ca>
Processor: 133 MHz Pentium with MMX
RAM: 32 MB RAM (expandable to 64 MB)
Hard drive: 1.5 GB (3.8 GB option for extra \$470)
Display: 10.4-inch TFT, 1,024x600 resolution
Other: built-in sound, built-in 33.6 kbps modem
Weight with battery: 1.7 kg (3.7 lb.)
Dimensions: 26.3x9.2x3.5 cm (10.3x7.5x1.3 in.)
Price: \$3,179

A few months ago, Toshiba released an impressive little system that sits somewhere between that company's own Windows CE alternative (the tiny 900 g Windows 95-based Libretto) and a full-fledged, traditional notebook computer.

Known as the Portege 300CT, it's a nicely designed "mid-size" notebook that weighs only 1.7 kg pounds, yet comes with 32 MB of RAM, a 1.5 GB hard disk, and a 133 MHz Pentium MMX processor. It's also a little smaller than your typical notebook, comes with a built-in data/voice/fax/modem, universal serial bus (USB) port, and a crisp 10.4-inch TFT active matrix color display with resolution of up to 1,280x1,024 (using a scrolling "virtual display" mode).

But enough of the features shopping list. This is a solid, well-designed machine that seems easy to use and offers more than acceptable performance for a system of its size and price.

One reason for the price is that the 300CT does not include a CD-ROM drive. You'll have to pay an extra \$599 for that as part of the optional CD-ROM docking station. This slimline add-on, which slips under the Portege, gives you a 10x CD-ROM drive, stereo speakers, and PS/2 mouse and keyboard ports along

with the existing external VGA display, serial, parallel and PC Card ports.

The floppy drive, however, is external to the machine. It is included in the basic price of the system, but does need to be connected to a special floppy disk port in order to be used.

All of these little compromises do allow the 300CT to be a slimline powerhouse that offers you as much power as you are likely to need when you're out of the office, plus full access to all your key add-on features when you are at your office desk.

In fact, it would seem the ideal kind of machine to offer as a "fleet" notebook to mid-level executives in a corporation. It is certainly not the most expensive in its class, can do almost everything you'd ask of a corporate desktop computer and fits well into an environment where a docking station would seem a must.

A basic I/O adapter that comes with the price of the 300CT can function as a simple docking station by allowing you to leave printer, external keyboard, mouse or floppy disk connected to the adapter. When you leave the office, you simply unclip the adapter, leaving the cabling intact (except for the external display, which must still be plugged directly into the back of the 300CT, since a VGA port is not offered on the I/O adapter).

Many small businesses might benefit from this particular model as well. It is small enough to carry to meetings and presentations without breaking your back, but powerful enough that any failure in the presentation would be hard to blame on the machine.

None of this is to say that the 300CT is perfect. The keyboard layout, for example, seemed a little odd, with the "Windows" key in the upper right corner of the keyboard and the Home, PgUp, PgDn and End keys stuffed vertically along the right side.

Real power users may also find that the hard disk is just not big enough, the modem is not fast enough and the processor just can't keep up with the heavy-duty applications they want to throw at it.

Toshiba, however, is not likely to be caught off-guard by these concerns. In January, it released a "big brother" to the Portege 300CT, the Portege 320CT. The 320CT is a similar size and weight, but offers a 266 MHz Pentium MMX processor, a 3.82 GB hard drive, a 56Kbps internal modem and a 20x CR-ROM drive in the optional CD-ROM dock.

As with cars, boats, planes and everything else in life, you pay for this level of performance. The Portege 320CT will set you back a cool \$5,879.

This tells you clearly that not all is equal in the world of notebooks and desktops. To get the faster processor and modem—and a bigger hard disk—you have to be prepared to pay almost double the price. So it seems that size does matter, and the smaller the machine, the bigger the premium for better performance. □

286/386/486 System Upgrade To Pentium System Free Installation

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Intel Pentium MMX 166/200/233.....\$329/359/459

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>Houston M710 i440LX ATX (Pentium II)
>On Board Mode 3/4 UDMA/33 & Super I/O
>32Mb SDRAM DIMM 168Pin 10ns (Pentium II w/ Eprom)
>Panasonic 1.44 Floppy Drive
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>ATI Video Xpression 1MB UPG. to 2MB (+\$8 2Mb)
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>Axiom Internet Access Kit (30 Days FREE Internet)

Intel Pentium II 233/266.....\$1499/1649

Intel Pentium II 300/333.....\$1819/2179

AMD K6 166/200/233.....\$1129/1159/1185

IBM 6x86MX 166/200/233..\$1079/1069/1149

Intel Pentium MMX 166/200.....\$1109/1139

Intel Pentium MMX 233.....\$1229

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>AcerOPEN AX6L i440LX ATX (Pentium II Only)
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>32Mb SDRAM DIMM 168Pin 10ns
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>ATI 3D Xpression + PC2TV 4Mb SGRAM
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>Acer 24X CD-ROM Drive (+\$40 Acer 32X CD-ROM)
>Acer 56K FaxVoiceModem UPG. to ITU Standard
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>Fujitsu 8725 Win95 Keyboard
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IBM 6x86MX 166/200/233..\$1429/1449/1519

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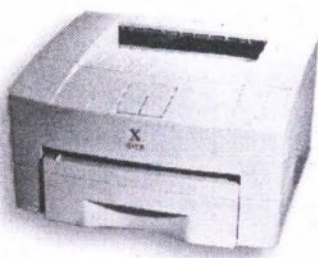
NEW TYPE

COMPUTER WORKSHOP

TCP TEST LABS

A laserprint of your very own

Continued from page 98
older, higher price tag, so this year we were even more thrilled when we learned that the 4508 can now be had for a street price of just under \$600. With a true 600x600 dpi resolution and a maximum printing speed of 8 ppm, the



DocuPrint 4508 leaves very little to be desired. It comes standard with 2 MB of RAM, which is further expandable to 34 MB using industry standard SIMM modules—a definite bonus. The standard input tray can accommodate 250

sheets, while an additional 250-sheet tray is available. Print quality was undoubtedly among the best in its class. The standard toner cartridge in this unit is rated for 5,000 pages and costs less than \$100 to replace. It comes standard with a one-year, depot service warranty, which can be upgraded to two years for an additional \$50. All things considered, the DocuPrint 4508 is a solid performer from top to bottom.

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ATI Xpert@Work AGP 4Mb
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PENTIUM:
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SH571(AT 430TX 512K) \$159
SH579(AT VIA 512K) \$109
PENTIUM II:
SH637(ATX 440LX AGP) \$169

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PENTIUM:
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GA-586T2(AT 430TX 512K) \$129
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Mystique 220 4m \$135
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24X/32X
\$89/\$105
Fujitsu
UDMA 2.1/2.6/3.2/4.3/5.2Gb
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MAXTOR
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Panasonic CW7502B 8/4 \$619

HARD DRIVE

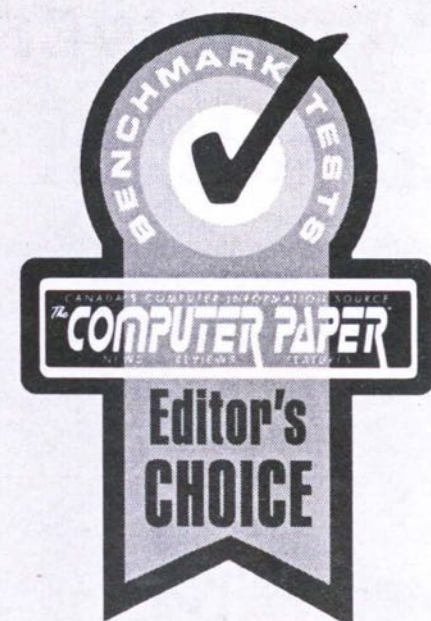
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UDMA 2.1/3.2/4.3/6.4/8.4GB
\$189/239/283/359/489
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* WD 5.1G HD \$299
* Quantum 6.4G \$359
* Samsung 2.1G \$169



Editors' choices

Performance:

Fujitsu PrintPartner 10V

It didn't take long to realize that with its 10 ppm print speed and maximum resolution of 600x2,400, the PrintPartner 10V was well on its way to winning the Performance award this month. For an average street price of \$730, this printer offers everything you could want in a personal laser printer, and then some.

Price/Performance:

Lexmark Optra E+

This month was harder than most to pick a price/performance winner simply because there were fewer printers in the roundup, and of those that were present, each had several desirable options. But in the end, this category looks at how much value you get for your dollar.

Although the Optra E+ may be more expensive than other entry-level lasers, its overall solid design and engineering make it an excellent choice. When you open up the cover on this machine, it has quality written all over it. If you're considering this printer for a small office environment, you'll also benefit from having the option of installing an Ethernet adapter into the printer for instant networkability. There's also a postscript option, as well as a high duty cycle of 10,000 pages per month.

Overall:

Xerox DocuPrint 4508

The DocuPrint 4508 from Xerox stands out for overall value. It offers print speeds of 8 ppm, true 600x600 dpi output, a 20 MHz processor, RAM upgradeable to 34 MB using standard SIMMs, it produces superior printouts, and it has recently undergone a major price cut, taking it down to around the \$600 mark on the streets. If you want a no-nonsense laser printer for your home or small office, this is the one to get. □



HARDWARE

Roll your own CDs

A look at Hewlett-Packard's latest SureStore CD writer

BY GRAEME BENNETT

SureStore CD-Writer Plus 7110e

(external; a 7110i internal model is also available).

From: Hewlett-Packard

Availability: the 7110i and 7110e are available in U.S. and Canadian retail markets only and include the LivePix Photo Enhancer and Organizer software. Other than that, the 7110i and 7110e are identical to the 7100i and 7100e.

Suggested retail price: \$870 (7110e), \$712 (7110i)

Pros: Writes CD-R and CD-RW discs. Parallel port for easy connection to any PC (the 71x0e drive is an IDE device with a parallel port adapter by ShuttleTech). Hardware supports Disc at Once (DAO) and Track at Once (TAO) modes. Multiread compatible. In addition to being a 2x rewriter, the SureStore is also a 6x CD reader, although the limited lifespan of laser emitters makes a cheap CD-ROM drive a better (and usually faster) choice for daily use.

Cons: No on/off switch on the drive. Incompatible with Hewlett-Packard ScanJet 5100C. (Does anyone else find this a little ironic?) DAO and TAO modes are not supported by the software that ships with the drive. However, a message on Usenet from Timothy Martin (tjmartin@anl.gov) clears up the confusion:

Says Martin, "Those users who are considering using the Philips V2.02 firmware on a HP7100/7110 CD-RW machine to enable DAO, please note that the Adaptec Easy CD Creator software that is bundled with the drive does not support DAO. At least my ECDC V3.01 [257] did not support DAO. The V3.01a upgrade on the Adaptec Web site for the HP 7100 drives also does not support DAO. I purchased Adaptec Easy CD Creator Deluxe—typically about \$89—and can only now do DAO."

The software supplied by HP has another notable limitation. If you want to make "true" ISO 9660 CDs (readable on virtually any kind of computer including PCs and Macs) for cross-platform distribution, the included soft-

ware won't do it. Mastering software that supports these modes is, however, available from Adaptec (<http://www.adaptec.com>), Ahead (<http://www.ahead.de>) and other suppliers.

Initially, we had some difficulty getting the drive to work on our test system—a problem that eventually proved to be related to a previously installed version of CD Creator. Subsequent tests on other computers, however, suggest that most users won't have a problem. Note that most existing CD-ROM drives won't read the CD-RW discs this drive creates unless they are specified as "Multiread compatible." Most older drives, including an 8x unit we purchased in 1997, aren't. CD-R discs created by the CD-Writer, however, worked in every drive we tried.

Do-it-yourself CD recording

The HP SureStore CD-Writer Plus 71x0 series of drives allow you to write and rewrite discs playable in standard CD players. With the price of CD-R discs now under \$2, this provides a very attractive cost-per megabyte when used as a backup medium. (We've seen CD-R disc prices as low as \$1.80 each in 100-lot quantities.)

But the drive can be used for several other purposes, too. Bundled software includes Adaptec EZ AudioCD (essentially a subset of Adaptec's EZ CD Creator) for making audio CDs, DirectCD 2.0 and CD Copier, plus software to erase CD-RW discs and a utility for designing jewel-case artwork. A multimedia quick tour is also provided.

Direct CD is the application most SureStore owners will use when writing to a CD-R or CD-RW disc. It enables drive-letter access and allows you to write to the CD as if it were a giant floppy disk. There is a catch: DirectCD uses a special UDF disc format to add these capabilities and, currently, this makes the discs created by DirectCD compatible only with other Windows 95/NT systems, even after the disc is "closed" in a variant of the ISO 9660 format that allows the disc to be read on other Windows 95/NT systems.

DirectCD's incremental writing has other drawbacks, too. It essentially disables all caching of the CD so that the system doesn't read ahead—apparently, a requirement of the incremental writing process. This degrades the performance of your CD drive.

How DirectCD works

DirectCD writes incrementally to a CD using special UDF technology. You must format the disc before use—a process that takes 50 to 90 minutes (yes, minutes!) in the case of the CD-RW discs.

CD-R discs are, for some reason, a great deal faster to initialize, and will typically format in a few seconds. These discs can then be written to, via the DirectCD driver, as if they were floppy disks from the Windows explorer, or any application, such as Microsoft Word.

CD-R discs, unlike their Read/Write siblings, must be "closed" to be readable on other computers. This is handled via DirectCD's so-called "Eject Wizard," which makes the discs compatible with the ISO 9660 format of a standard CD by a fancy trick, in which the disc is rewritten with an ISO9660 "directory" partition that

refers to the data on the UDF partition. It makes the disc appear to Windows 95 or NT as if it were a standard ISO9660-formatted disc. Thus, the disc isn't a "true" ISO 9660 disc, although the distinction is largely irrelevant for Windows 95 or NT users. What it does mean, however, is that Mac and Windows 3.1 users won't be able to read the discs.

If you need to produce discs readable on platforms other than Windows 95 or NT, a package such as Easy CD Creator 3.0 (available for download directly from <http://www.adaptec.com> for US\$99) or Nero 3.0 (US\$69 from <http://www.ahead.de>) will do the trick. Either title produces CDs that can be read from Windows 95, Windows NT 3.5.1

and 4.0, Windows 3.11, MS-DOS, Solaris, Mac, and Linux systems.

As mentioned earlier, we initially had difficulty getting the SureStore drive to work because our system had the Easy CD drivers already installed and the installer didn't check for them. Only by hunting through the directories to the Resource folder did we find an uninstaller that noticed the problem and cleaned the system up for us. We had no problems with Nero and recommend it highly. It can write discs all at once, or in multiple sessions.

DAO mode

Why would you want to write a whole disc at
Continued on page 105

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Glossary

CD: Compact Disc

CD-R: CD-Recordable

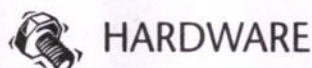
CD-RW: CD-Rewritable

DAO: Disc at Once, a mode of operation in which the whole disc is written at once. DAO reproduces the data format of a CD much more accurately than using TAO mode.

Multiread: CD-RW drives necessitated changes to the firmware and hardware of standard CD-ROM players to be able to handle the differences in reflectivity, defect management and so-called random block retrieval required by the new "write-many" process. Such drives are said to be Multiread compatible. In other words, older CD-ROM drives that are not Multiread compatible may not be able to read CD-RW discs.

TAO: Track at Once.

—Graeme Bennett



Color WinCE machines

Sharp and HP's new handhelds are interesting notebook alternatives

BY GEOFF WHEELWRIGHT

The first color-screen handheld computers based on the Microsoft Windows CE 2.0 operating system are finally on sale. Here, we look at models from Hewlett-Packard and Sharp.

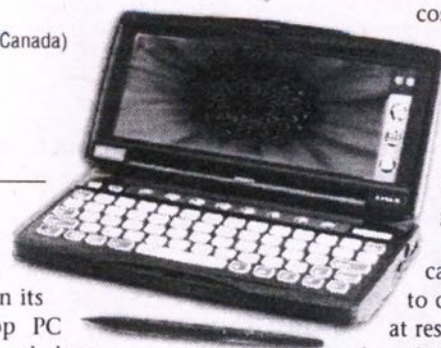
HP 620LX

From: Hewlett-Packard (Canada) Ltd.
800-387-3867,
<http://www.hp.com>
Price: \$1,269

Hewlett-Packard was first out of the gate in Canada when its HP 620LX palmtop PC started to appear on shelves in early January. It was clear from the outset that this machine is unlike any handheld HP has released before.

Larger than most earlier units, it is jet black in color, and provides a set of specifications unlike any we have seen before in a handheld system. HP is clearly aiming this \$1,269 system at what it calls the market for "true enterprise companions that address the needs of today's mobile professionals."

The 620LX comes with 16 MB of RAM, the usual collection of Pocket Office applications (Word, Excel, PowerPoint and Outlook), an expense-tracking application called Quicken Expenses, as well as voice recording, fax, and custom calendar-viewing applications. In addition, it has a useful search tool called bFind, which is similar to the File Find function in Windows 95. For showing presentations on a large-screen display, there's also room in the HP system for an optional VGA-out card (sold separately).



If the on-board 16 MB of memory isn't enough, you also get a dedicated storage slot for a CompactFlash card (the same kind of storage media offered on many new digital cameras), and a PC Card slot for a modem connection, local area network (LAN) connection or another memory card. HP did not, however, build a modem into the 620LX.

It's clear that this would have added to the cost, which is already getting within striking distance of the price tag for a low-end notebook computer. The idea, however, that the HP 620LX provides so many features is that you may be able to avoid getting a notebook altogether.

Using the optional VGA-out card, for example, it is possible to display output from the 620LX at resolutions of up to 800x600 pixels, which could prove useful when showing PowerPoint presentations or Excel spreadsheets to a group of people.

HP has also designed the 620LX palmtop PC (like its earlier monochrome counterpart the HP 360LX palmtop PC) so that it can be managed as a component on a corporate network via a DMI (desktop management interface)-compliant client. HP is offering this client free to all HP palmtop PC users in an effort to make its Windows CE-based systems more attractive to corporate buyers.

So that's what's in it and what HP expects of it. But what, you may ask, is the machine really like to use? Well, to test it properly, I took it on a recent trip to Florida for use as my main note-taking device at the Lotusphere '98 conference.

I deliberately left my notebook computer at home and decided to rely totally on the power of HP's new "Rolls-Royce" of handhelds. Although I brought a Psion Series 5 as a backup, my main focus for this trip was on the performance of the HP 620LX.

The first thing I wanted to be clear about was the battery life. Unlike most other Windows CE systems produced to date, the HP 620LX does not use standard AA batteries. Instead it relies on a built-in rechargeable battery pack. I wasn't sure just how long the charge was going to last on the batteries, since my earlier experiences with Windows CE 2.0 systems running on standard AA batteries were not always positive.

The good news was that the battery pack was far better than I had expected, running for most of the day on a single charge as I moved from plane to plane on the way to Disney World. It did run out somewhere between Salt Lake City and Orlando, however, leaving me to switch to the Psion Series 5 to finish the work I needed to accomplish on the remainder of the flight.

For a rechargeable battery, that ran most of the day, with some email work (which meant using a PC Card modem) and the use of a color screen, it was pretty impressive, particularly in its ability to handle the power requirements of the PC Card modem.

While this battery configuration eliminated the opportunity to simply insert fresh AA batteries if I ran out of power mid-flight, ensuring that the machine was fully charged and ready to roll beforehand seemed to ensure that I didn't have to spend much time without use of the machine.

Once I got to Florida, the built-in dial-up networking features (which operate almost identically to those in Windows 95) allowed me to easily establish an Internet connection from my hotel room to a local service provider in Orlando. I was able to check all the news of the day using the built-in Pocket Explorer Web browser, check my email using Pocket Outlook and even dial in to my home computer over the Internet using Symantec's PC Anywhere CE.

There were several really nice things about this system that I appreciated on this trip. The

first was the bright, clear and easy-to-read color screen. It was perfect for taking notes during meetings, even when the lights were turned down during the obligatory slide and multimedia presentations. Even better, the screen was so bright it actually lit the keyboard well enough for me to see what I was typing.

The keyboard itself was the nicest I have seen from HP on a palmtop. While it isn't the best in the current crop of Windows CE systems (a title that is still held by NEC's MobilePro 700), it was very good—and more than adequate for vast amounts of note-taking during Lotusphere.

Although I was immensely impressed overall with this machine (and will be very sad to part with it on the dark day when HP's public relations firm calls to say that they *must* have it back right now), there were a few things that didn't quite make sense. I would have been slightly happier to see HP include a modem in the machine and I could not understand why HP designed the voice recorder function the way it did (with the on/off switch for voice recording sitting in the upper left corner of the keyboard).

This perhaps makes sense if you are only recording voice messages when the 620LX is flipped open in a desk. But in a crowded press scrum—or while driving down the highway—it would have been much better to have an external record button that could be used to make quick voice notes.

The HP 620LX palmtop PC includes a one-year limited warranty that the company says will provide next-day, express pickup-and-delivery service.

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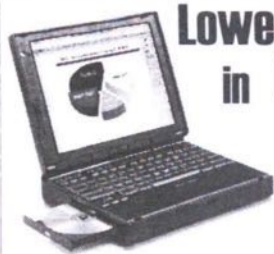
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HARDWARE

A very versatile PC audio card

TCP looks at the Terratec EWS64XL and one of its clones

BY GRAEME BENNETT.

Pros: An astonishing number of features packed into this hardware and software combo. Good sound, flexible and easily upgradable architecture.

Cons: Limited NT support, headphone output is moderately noisy. Not compatible with Sound Blaster 16. There are so many signal routing options, the software can seem confusing at first. I/O module must be physically disconnected to use devices that use the card's on-board MIDI port, such as Microsoft SideWinder Force Feedback joystick.

Closest Competitor: Hanmesoft Sound Track 128 Ruby

The Terratec EWS64XL is a card that tries to do it all: it's a hard disk recorder, a sampler (with up to 64 MB of RAM onboard). It's a Sound Blaster and Windows Sound System compatible multimedia/games card with a joystick port and quadrophonic audio outputs. It has an outboard I/O module innovatively designed to fit in a 5.25-inch drive bay, with two MIDI interfaces for up to 32 separate MIDI channels. It features both analog and digital (optical and s/pdif coax) outputs. This separate module offers front-panel access to MIDI, digital I/O and and headphone jacks.

Terratec Audiosystem EWS64XL

From: Terratec

Version tested: 2.0

Platform: Windows 95 only

http://www.terratec.net

Street price: about US\$580

The card's elaborate Mixer software provides effects ranging from reverb and echo to 3D spatialization and pitch control. It has expandable onboard RAM (4 MB standard) and can load up to 64 MB of General MIDI and/or GS files and, well, you get the idea. Remarkably, it is rather successful at nearly all of it. For the hobbyist to semi-pro musician, this is a card well worth considering.

Version 2.0 is a big improvement over earlier releases in both functionality and technical design. (The final 2.0 drivers are available at the Terratec Web site, but they still lack a long-promised "Ed!son Wave" waveform editor.) Version 2.0 also adds a useful Audio In control, allowing easy adjustment of reverb, echo, chorus and volume of incoming signals.

We found that when audio was routed via the WAVE inputs and outputs, the fidelity and S/N ratio were better than when the card's CODEC I/O was used. The Codec feature, it seems, is primarily there for games compatibility. It is also worth mentioning that the EWS' effects section is much less of a CPU hog (being implemented in hardware) than the FX available in Cubase VST, which are currently software-based, even on systems equipped with a DSP audio card.

The 2.0 drivers also have less onerous IRQ requirements. With the version 1.x drivers, it took three IRQs to enable all the card's features. Version 2.0 reduces this to one—and, if use of the codec is not required, it requires none at all. Even better, version 2.0 allows several EWS cards to be added to a system, each one "cascading" off the first card's IRQ—neat!

Initially, we experienced some timing problems in Cubase VST when using this card. However, following the advice listed in the EWS software FAQ helped a lot. We also found that turning off the Codec input and disabling unused Wave inputs improved the S/N ratio. The above-mentioned FAQ and the Steinberg UK Web site have a number of useful tips on how to set up Cubase for optimum perfor-

Glossary

Codec: compressor/decompressor

IRQ: interrupt request

MIDI: musical instrument digital interface

S/N: signal to noise

s/pdif: Often pronounced "spidiff," it stands for Sony/Philips Digital Interface Format, and is a standard digital connector found on sound cards such as the Terratec EWS, Event Layla, Sound Blaster AWE64 Gold, etc.

VST: Steinberg's term for Cubase's Virtual Studio Technology

—Graeme Bennett



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mance. Another useful site is the MAZ sound Web site. It has a page of useful tips and links specific to the EWS64XL.

Sound Track 128 Ruby

From: Hanmesoft
Price: US\$199

Pros: This Korean clone of the EWS64 is about half the price of the Terratec card, when the price of the optional digital I/O module is factored in. Four independent outputs, or two outs, plus effects. SRS 3D sounds great. Less confusing mixer software than that provided with the EWS64XL.

Cons: Takes two IRQs. We had difficulty setting up the card under Windows 98. (It worked well in Windows 95, though). No NT drivers provided.

Like the Terratec card, this card comes with a 4 MB RAM module, support for 32 MIDI channels plus 64 hardware voices, four outs, a digital I/O module (optional) and 20-bit recording capability. The Dream and Crystal chips provide Windows Sound System and Sound Blaster Pro compatibility, along with a variety of onboard effects, including very nice SRS 3D and mixer taskbar controls. The drive-bay I/O module of the Terratec card outclasses the simple expansion slot connectors provided here, but the functionality is similar. □

Roll your own CDs

Continued from page 101

once? Simply put, because some CD-ROM duplication facilities don't accept track-at-once CD-R. If you are mastering a CD, DAO is the preferred method. To use the DAO function, you must use a third-party package, such as the latest version of Easy CD Pro 95 (2.11c or newer).

In our tests, the drive worked well under both Windows 95 and Windows NT 4.0. We were able to easily back up existing CD-ROMs to the SureStore on CD-R or CD-RW media, using the existing IDE CD-ROM drive on our PC as the source drive. (CD-R discs run about US\$2 each; CD-RW discs cost about US\$18.) In fact, we experienced very few of the dreaded buffer underrun errors that frequently plague CD-R users.

It's also worth mentioning that using a CD-RW drive is a good way to get the hang of CD recording. If it fails, you can simply erase the CD-RW media and try again. On a standard CD-R drive, failures are much more frustrating and expensive, as the "blown" discs cannot be recorded again. It's also worth mentioning that we blew several discs using DirectCD and Easy CD, but did not experience a single failure using Nero.

Results were not as good when recording audio CDs using the bundled EasyCD Audio software. Titles such as GEAR Audio 4.2 truncate the last two seconds of audio of each track. (Believe me, this plays hell with the flow-together songs on a progressive rock opus, although you can use an extra-cost software package such as Easy CD Pro to manually assemble a disc a track at a time—hardly ideal!)

Some users also report another problem: audio discs written with more than 10 tracks of audio combine the remaining tracks as one long song. Thus, if recording audio CDs is your primary application of a CD Recorder, you might want to go with a top-rated SCSI-II based drive instead of an ATAPI or parallel-interfaced model. It's also worth mentioning that none of the audio extraction programs we tried (CDPLAYER, CDCOPY, CDDA32, etc.) worked correctly with the 7110 (it's an ATAPI drive; the programs expect SCSI). We finally found success with WinDAC32. It is available at <http://members.aol.com/schmelnik/dac.html>.

After numerous tests, we believe that Ahead's Nero 3.021 (US\$69) is the most reliable CD recording software. It works well with the 7110e (it detects the drive as an HP 7100). It's recommended. □

Palm PC spotted at Lotusphere

One of the most intriguing minor attractions at Lotusphere '98 actually had nothing to do with either Lotus Development or parent company IBM. It was at a small booth demonstrating wireless applications for use with Lotus Notes.

There I encountered the rarest of computer industry species: the new Microsoft Windows CE-powered Palm PC. In fact, it wasn't a full production model—and it wasn't from Microsoft. But this pre-production demo unit from Samsung gave me a much better idea of what these competitors to the 3Com/USR Palm Pilot will actually look and feel like.

It should come as a surprise to no one that it looks and feels very much like a Palm Pilot, with a few subtle differences. The content onscreen looks rather like a squashed version of what you see on a standard, keyboard-based Windows CE system and seems to work reasonably well when looking at email messages or diary entries.

I was less convinced about how well it will work with the version of Pocket Internet Explorer. It included buttons for a few channels of data that Microsoft envisions being either from favorite Internet channel content providers or your company's intranet.

One idea I did quite like in the built-in software was the word-completion feature. As in Microsoft Word 97, when you start entering a word that the software believes it recognizes, it will suggest what it thinks it the completed word. If, for example, you entered "Janu," it would suggest the word January and give you the chance to complete your sentence based on this word.

I didn't get to spend a whole lot of time with the character recognition system, but I was interested to learn that it operates using either a "natural" (where you just form letters as you normally would when writing with a pen on a piece of paper) or "unistroke" (where you enter data in uniform way, much like Palm Computing's Graffiti) character set. If the natural character recognition is good enough, this might prove one of the most compelling features when compared against the existing Palm Pilot Professional. —Geoff Wheelwright

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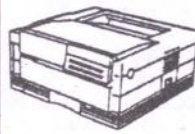
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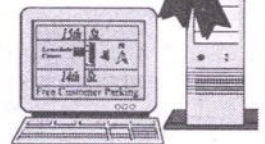
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SOFTWARE

Remote in the real world

Putting PC Anywhere to the test

BY GEOFF WHEELWRIGHT

Despite being a long-standing supporter and user of handheld computers, I have always been hesitant about heading out on a business trip with only a handheld computer. Inevitably, I cave in to the temptation of slipping a notebook computer into my briefcase because the handheld computer doesn't let me do all the things I need to do when I'm out of the office.

PC Anywhere for Windows CE PC Anywhere32

From: Symantec

<http://www.symantec.com/products>

Estimated price: \$120 (CE); \$200 (Anywhere32)

At least that's the way things were until I got hold of a new Windows CE 2.0 machine and a copy of Symantec's PC Anywhere CE. PC Anywhere is a "remote control" application that allows you to remotely run applications—and use data—from another personal computer. This software promised to allow me to use a handheld computer (in this case, a Hewlett-Packard 620LX) to dial up my desktop computer via a TCP/IP (Internet) connection and remotely run the software on the desktop.

This sounded like a perfect solution to the challenge of staying in touch while I was away, without the hassle of lugging along a notebook computer. I arranged with Symantec to get a copy of PC Anywhere CE for the HP handheld and a copy of PC Anywhere32 to run on the desktop.

Before I go into the details of how all of this worked, I should explain a bit more about why I wanted to do it in the first place. Unlike Windows 95 notebook computers, Windows CE systems cannot run standard Windows 95 software. While they include Pocket versions of Microsoft Word, Excel, PowerPoint and Outlook, these applications do not possess the full power of their desktop counterparts.

In particular, Pocket Outlook does not currently allow you to send or receive email from the Microsoft Network (MSN). You need the full Windows 95 versions of either Outlook Express or Outlook in order to do this. Being able to use a Windows CE handheld to dial in to a desktop computer capable of running these applications meant that I did not have to carry a Windows 95 notebook to access my MSN email.

Ironically, almost any other major Internet service provider's email system would have been capable of running on Pocket Outlook as it supports standard POP3 Internet mail. But because I was using MSN, I had to look at a solution.

The second issue that was important to me was being able to access all my incoming faxes—and the data on my desktop system—

remotely. Using PC Anywhere CE, the idea was that I would be able to read all incoming faxes as if I was at home (since my PC is set up to receive faxes using Winfax Pro) and look at all the data on my hard drive.

I installed the software on both my desktop PC and HP handheld and tested it extensively before leaving home. In doing so, I discovered a few things. The first was that the software worked best when I set the screen resolution of my desktop to a simple 640x480 resolution. This is because the resolution of the handheld is 640x240—exactly half the resolution of the desktop.

By making this change to the resolution of the desktop, I could scroll up and down the larger screen of the desktop from the handheld—seeing up to half the screen at one time. While other resolutions worked, they didn't allow me to clearly see the desktop screen remotely.

The second thing I discovered was that the Windows CE version of PC Anywhere did not offer any ability to transfer files from desktop to handheld. The only data that could be transferred was what you could put on the clipboard. This was not a huge limitation, as I only wanted to transfer text from email messages and word-processed documents, but it was a little surprising. The full Windows 95 version of PC Anywhere 32, of course, does allow for file transfers.

Nevertheless, the software did allow me to read my email and faxes. If I used the OCR (optical character recognition) software on WinFax Pro, I could even paste the text of the fax into a document on the handheld so that I could read it "offline."

Once I hit the road, I was delighted at how well this solution performed. It made it possible for me to feel confident that anything I could do on my desktop, I could now do remotely via PC Anywhere CE. By installing PC Anywhere32 on a desktop machine at the press room at the Lotusphere conference, I was able to dial in to my desktop at home and get full access to file transfer capabilities. Using this capability, I was able to leave copies of digital pictures—taken a few hours previously at Disney World with a digital camera—on the screen for my family to see!

Additional requirements

I have one caveat in all this. The technology that really made it all sing was the cable modem and Rogers Wave connection I have at home. This allowed me to "host" PC Anywhere sessions over the Internet to a specific IP (Internet protocol) address—instead of requiring me to use a telephone to do it.

Having the connection hosted by Wave meant that I could make the connection via the Internet (thereby eliminating long-distance phone charges), and that I could leave the phone line free to answer faxes instead of answering PC Anywhere calls. □



HARDWARE

The proof is in the printer

Epson's bundle lowers the cost of high-end, pre-press printouts

BY JEFF EVANS

Epson's progress in the inkjet printer market over the last four years has been a considerable comeback story.



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From: Epson Canada
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Epson had once been the market leader in impact (dot matrix) printers, but seemed to lose its way with the advent of low-cost inkjet and laser printers, while its main rival, Hewlett Packard, assumed an international lead. With the introduction of the Epson Stylus series of inkjet printers in 1993, Epson began to take back a commanding share of the most rapidly growing category of personal computer printers.

For several years in a row, Epson's market share grew steadily, and its range of printer models also expanded, eventually extending from entry-level, letter-sized printers for the home to mid-range, tabloid-size printers for offices and low-end graphic arts operations.

Epson Canada has extended its reach to the high end of the printer market. On March 2, it unveiled a radical new printer for the pro-

fessional graphic arts market, a 1,440x720 dpi (dots per inch), tabloid-sized color inkjet with a host of high-end color control and printer networking features.

The new Epson Stylus Pro 5000 is designed for "pre-press proofing"—creating printouts that accurately simulate the appearance of a page as it will print from a full-sized press. For publishing and advertising professionals, being able to accurately forecast color values and registration of a computer-generated layout before the professional presses start running means saving big dollars and keeping big corporate accounts.

Until now, high-quality proofing has been the territory of vendors such as Agfa, Kodak, and Tektronix, with products ranging in price from \$20,000 to \$70,000. With the Stylus Pro 5000, Epson intends to re-write that price/performance equation.

The printer/server two-step

The Epson Stylus Pro 5000 is a two-piece printing solution consisting of 13x19-inch (oversize tabloid) paper capacity, six-color inkjet printer, and a separate, standalone PostScript 3 print server. According to Epson representatives, the printer is sold separately in Japan, but for the North American market, Epson decided the performance boost and network manageability offered by bundling it with the print server merited selling the devices together.

The Stylus Pro 5000 printer unit uses a new version of Epson Micro Piezo print head technology, offering resolution of text and graphics comparable to an imagesetting typesetting machine. Maximum resolution is true 1,440x720 dpi. The ink dots formed by the print head nozzles are about one-quarter the size of any previous inkjet, allowing for extremely precise text outlines, and accurate true color mixing.

The printer uses a six-ink system (cyan, magenta, yellow, light cyan, light magenta, and black) requiring four separate ink cartridges. The print speed ranges from about 1.5 minutes for a small, lightly covered page, to up to 24 minutes for a tabloid-size page with bleeds and registration marks, with full ink

coverage. Cost per page for materials ranges from 12 cents to \$7. The printer has a "straight through" option that can handle up to 200 lb. card or watercolor stock, plus a built-in, 250-sheet tray, and optional second 250-sheet tray.

Epson's fast-dry ink dries in a tenth of a second, allowing for good print results on almost any printing media ranging from overhead

transparency to iron-on T-shirt paper. DuPont is working with Epson to supply a new range of special proofing media for the Stylus Pro 5000, including a "newsprint" proofing paper that is intended to accurately simulate how a document will print on newsprint. This newsprint proofing will especially be of interest to printing and publishing companies.

Continued on page 108

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In the Land of the Amiga Aliens

Reflections on the computer that will not die

BY JEFF EVANS

I have a secret. I used to be a fanatic. I was a devotee of a strange international fraternity, a techno-religion whose members believed they had the key to paradise.

No, not the Heaven's Gate cult. My object of worship was not a messianic man or woman, or a theory of reincarnation, or a coffee shop franchise operation, but a collection of plastic and silicon and bits of data. It was the Amiga computer. The Amiga offered capabilities such as easy-to-use, well-integrated, high-quality animation and video, which have yet to be matched on another computer. It was a perfect low-cost computer for artists, teachers, musicians, hackers and games players.

Since Commodore Business Machines, the manufacturer of Amigas, went into voluntary liquidation in April 1993, more than five million Amigoids have become "computer orphans." We have all had to reshape our individual destinies in the absence of "Amy," the computer that inspired an unreasonably fierce loyalty in its users.

In my own case, I thought a clean break with the Amiga was the best course, for the financial security of my family and my own emotional health. In 1993, I rented out my Amiga to a TV network to be used as a teleprompter, and acquired a Windows 486 PC. Many of the thousands of Amiga users who are serious artists, videographers and animators continued to use the Amiga productively, although as the years went by, many migrated from the Amiga platform to the PC or the Mac.

The proof is in the printer
Continued from page 107

The server

The second half of the Stylus Pro 5000 system is an EFI Fiery Adobe PostScript 3 Server and Raster Image Processor (RIP). This is a small mini-tower network printing device based on a MIPS 4700 processor (the same family of chip as in a Silicon Graphics workstation), plus a 2.1 GB hard drive, and 32 to 128 MB of RAM. The server allows jobs to be sent from Macs or Windows PCs over a network or via the Internet to the server, where the file is RIPped into a form that can be printed out as hard copy.

The server is preloaded with a host of network management and print management software options. Connecting the system to a network is a matter of simply attaching a network cable (100/10Base-T, EtherTalk, TCP/IP, Netware and other protocols are all supported), says the company. Each server automatically generates its own individual Web page, allowing files to be printed via a browser con-

Since 1993, what once was the world's most advanced personal computer (circa 1985) has gradually faded away into a kind of digital *Twilight Zone*, neither truly alive as a healthy computing platform, nor officially dead. As Commodore's management unaccountably spun out the sale of the company's assets for nearly a year and a half after the liquidation, the hard core Amigoid faithful

dreamed of a corporate white knight who would ride up, inject mil-

lions of dollars into the deflating Amiga infrastructure, and raise Amy from the dead.

The ghost in the machine

As it turned out, there were a couple of attempts at corporate resurrection of the Amiga, both of which seem to have sputtered out. A German company, Escom, eventually bought the Amiga assets in late 1994. The Germans restarted production of Amiga 1200 and 4000 (T) models, but then went into bankruptcy.

After more delays and confusion, Gateway 2000, a mail order PC maker that does US\$5 billion in business annually, bought the Amiga technology and other assets, about a year ago. After some initially encouraging statements, Gateway has gone very quiet on any serious corporate support for a revitalized Amiga line. Aside from a recent press release denouncing another company that allegedly tried to sell Amiga technology to an Asian firm, Gateway has not had much specific to say about its Amiga acquisition.

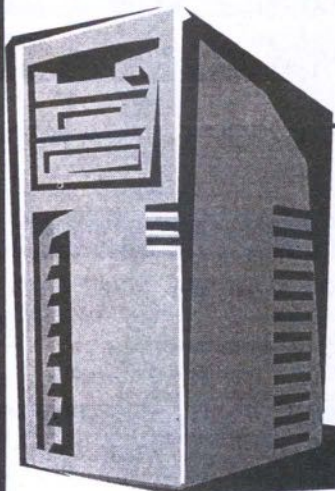
The Amiga stubbornly lives on, however, in the hearts of a still substantial number of

nection. A host of sophisticated color management software is loaded, allowing users to create custom color profiles for jobs to be printed.

The software includes standard-based Color Rendering Dictionaries (CRDs) for 3M DuPont WaterProof, Fuji ColorArt, and SWOP simulations, to name only a few. As well, there are more than 100 licensed Adobe PostScript fonts preinstalled on the printer, eliminating the need to constantly download common fonts along with a print job.

The Epson Stylus Pro 5000 is a thoroughbred in the professional graphics sweepstakes. The suggested list price for the complete printer and server system is a hefty \$14,799. For those with smaller budgets and less high-end requirements, Epson makes another 13x19-inch inkjet, the 3000 model, for about \$2,000. The Epson Stylus Pro 3000 is a "comping" (comprehensive layout) quality printer, rather than a press-proof quality printer, but it shares many of the 5000 model's virtues, at a less exotic level of quality and price. □

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TRENDS

creative Amigoids, and in the products of a handful of ingenious third-party manufacturers, mainly in Germany and the United Kingdom. Small numbers of new Amiga 1200 and Amiga 4000T's are still available from uncertain sources, and there is still an active trade in some models of used Amigas.

The main deficiencies of this once leading-edge platform are obvious: vaporous official support, and an aging technology base. To fill the gap, companies such as Germany's Phase 5 (<http://www.phase5.de/>) and Micronik (<http://www.micronik.com/>) have developed a number of add-on products to bump up the Amiga's performance to current PC levels.

Phase 5 makes accelerator cards, with the latest versions, the 603e series, offering PowerPC processor speeds up to 250 MHz.

Micronik has a product line of cleverly engineered tower cases, which allow a user to take an Amiga 1200 motherboard and make it the basis of a fully featured, high-speed new computer system, variously dubbed the A1300, A1400 or A1500.

One major Amiga defect that can't be addressed easily is cost: the economies of scale that have led to the under-\$800 PC aren't available for the Amiga. A basic Pentium-class (68060 chip) A4000T costs about \$3,700. With monitor, modem, expanded RAM, and CD-ROM and hard drives, an Amiga "dream machine" can cost \$6,000, about three times the price for an equivalent PC.

A noted veteran Toronto Amiga artist and animator I know finally made the switch to

Wintel a few weeks ago. For a custom built "clone," with a Pentium 200 MHz chip, 64 MB, 2 GB hard drive, an ATI All In Wonder video card, and all the trimmings, he paid about \$1,700. He wonders at the range of software available on the PC, and shakes his head: "the latest version of Adobe Premiere is so similar to Deluxe Video and other programs on the Amiga ten years ago." It has taken the PC more than a decade to copy the Amiga's inherent multimedia and video excellence, but it is getting very close—and at a bargain price.

The gathering of the clans

Toronto was the historic focus of the Amiga community in Canada (though Vancouver, Calgary and Montreal also boasted a healthy retailer, developer and end-user communities), and, at their peak, the annual World of Commodore/Amiga shows attracted more than 40,000 attendees.

Toronto has remained a hot spot for user group activities (including the monthly meetings of the TASA animation group at Toronto's Rhino pub on the last Thursday of each month). There have also continued to be successful Amiga computer shows, including a ComputerFest that attracted up to 5,000 Amigoids to a special Amiga section.

Ontario-based Randomize Show Management (<http://www.randomize.com>, Tel: 905-939-8371) has run two Toronto-area International Amiga shows, which each attracted about 3,000 attendees in 1996 and 1997. Randomize is currently planning

Continued on page 114

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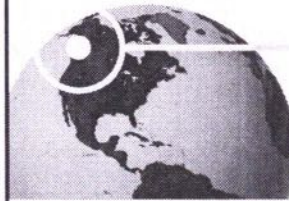
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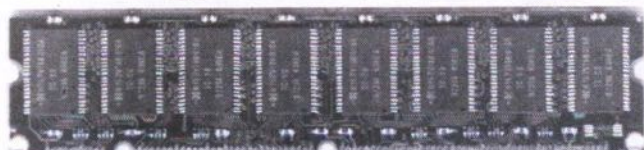
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CD-ROM bargains galore

BY ROSS MACDONALD

Chronic computerists will recall the bad old days of 386s, dot matrix printers, 15-pound laptops and, perhaps worst of all, \$200-plus CD-ROMs. Yup, youngsters may be incredulous but, during those trying times, quite basic material was encoded onto mylar, then packaged in great big boxes with price tags to match.

18 Media Graphics CD-ROM titles

From: Media Graphics International

Tel: 612-825-3811

Platforms: Windows 3.1/95

Estimated street price: less than \$10 each (yes you read right)

But things have gotten a lot better in recent years, and many a CD-ROM on many a subject can now be had for usually somewhere between \$40 and \$60. Still, that's a considerable wallop to the wallet once a CD-ROM library of reasonable proportions starts to emerge at home.

Which is where this eclectic catalogue of titles from Media Graphics International comes in. Though every title certainly isn't for every taste, there's enough art, entertainment and utility in this collection to attract just about everyone to at least a portion of it. And just about everyone will be able to afford it too.

That because, being public domain material, Media Graphics hasn't had to pay any licensing fees or copyright residuals and they're passing the savings on to us. This entire catalogue will be selling in Canada for about \$9.99 by the time you read this. To quote Michael P. Kimball, Media Graphics' national sales manager, on the subject: "The actual price will be up to the individual retailer but we expect these discs to be made available for under \$10 in Canada."

And if you're wondering where you might find these discs, deals have already been struck with Future Shop and (in Western Canada) London Drugs with other chains expected to sign up soon. Each disc is simply packaged in a cardboard envelope specifically designed to be displayed on a peg rack near the cash register—tapping into that impulse-buying phenomenon and all.

And if you're wondering what your ten spot will get you, the series includes such compelling titles as:

- **10,000 Graphics Pack: Vol. 1,2 and 3,** each containing thousands of photos and clip art subjects along with hundreds of sound effects;
- **500 Fonts,** you can figure that one out;
- **Windows 95 Animated Cursors,** Lots of

little cartoons to keep you entertained while your computer is executing some task or another:

- **The Ultimate Screen Saver**, featuring themes like Exotic Cars, Wildlife, Scenery and even "Fitness Men" and "Fitness Women";
- and, rounding out the generic end of the catalogue, **The Morphing Mania Screen Saver**.

Of more novel interest to most, however, will be disks like:

- **Handwriting Fonts:** to make your print-outs look like those anachronistic handwritten communiques of yesteryear;
- **The T-Shirt Design Kit,** which even comes with a certificate to get two sheets



of the special transfer paper free by mail, and some clip art discs of cartoon and old-time drawings.

Media Graphics also offers a couple of utility disks for basic desktop publishing (Serif PagePlus 3.0),

and generating your own calendars and address books (simply called Calendars).

Of course, it's all stuff you can get elsewhere, but where else will you get it neatly grouped, packaged and stored on such a handy medium for less than the price of a couple of beers?

I was fortunate enough to get almost all 18 titles to play with and they all delivered exactly what the titles promise, no less and, as might be reasonably expected, no more. Also in common, all the discs require only Windows 95 or 3.1 and 4 MB of RAM to run, which means almost everybody can take advantage of this bargain regardless of how old their machine might be.

It's too bad the Canadian dollar is in the abominable state it's in or we might get these discs for even less than the anticipated ten bucks. But, at least at that price, you can snag them one by one each time you go to the cash register until you've got the whole pleasant set. □

 CD REVIEWS

New words and dinner

New titles from Compton's Home Library collection

BY JEAN ALLEN-IKESON

Compton's Interactive Home Library, a division of The Learning Company, has just added two titles to its lineup of reference, Bible study and cooking CD-ROMs. The new additions are the American Heritage Talking Dictionary, and the Deluxe Weight Watchers Light and Tasty Cookbook, which comes just in time to help you shed your winter weight gain.

American Heritage Talking Dictionary, Deluxe Weight Watchers Light and Tasty Cookbook

From: Compton's Interactive
distributed by The Learning Co., 818-227-5609
http://store.softkey.com, or http://learningco.com
For: Windows 3.1/95
Price: \$39.95 (dictionary), \$44.95 (cookbook)

American Heritage Talking Dictionary
This "talking" dictionary is quite good and should play well in Canada. It includes plenty of entries about Canadian politicians (some with photos) and Canadian geographical sites, such as Trois Rivières or Athabasca,

both complete with color photos. Also included are Britishisms such as "dog-sbody."

The dictionary contains more than 90,000 spoken pronunciations of words and 200,000 definitions.

This title also includes a censor menu with password protection that parents can set to block anatomical terms or references, for example, that they deem "rude." This works quite well unless the term is embedded as an alternate definition.

You can launch this dictionary directly from Microsoft Word with the click of a button. With Windows 95, you can run it in the background and switch back and forth between the dictionary and your application.

The pronunciation of words should be a bonus for kids and English-as-a-second-language readers. The standard written pronunciation guides marking syllables, accents, etc., are also included. Click on any one and get a pop-up example of how to pronounce specific sounds. There is also a thesaurus entry and a notation on the origin of each word.

Besides the normal search function for words, you can double click on any word in a

definition to jump to a definition of that word. Pretty neat. This feature and the spoken pronunciation do what a book cannot, and justify using a disc-based dictionary.

Deluxe Weight Watchers Light and Tasty Cookbook

The Deluxe Weight Watchers Light and Tasty Cookbook also makes good use of the multimedia capabilities of CD-ROM technology. This disc includes a large number of searchable recipes (2,250) that can be edited, and scaled up or down depending on the number of servings required. Nutritional information is included for each recipe. The CD-ROM also has a glossary, a custom shopping list maker, videos sequences, tips for buying, preparing and serving a wide assortment of foods, and a health and exercise section.

The only drawback is that if you edit the ingredients, the nutritional information—calories or fat—is not adjusted accordingly.

On the positive side, this disc comes with some bonuses: Calendar Creator 4.0 CD-ROM, and a coupon for *Weight Watchers Simply the Best* hardcover cookbook (you pay the \$4.96 shipping charge).

This CD-ROM features the complete contents of 10 Weight Watchers cookbooks including *Quick Meals*, *Cut The Fat*, and *Versatile Vegetarian*. Each recipe can be printed in three formats: 8.5x11-inch, 3x5-inch, or 4 x 6-inch size index cards.

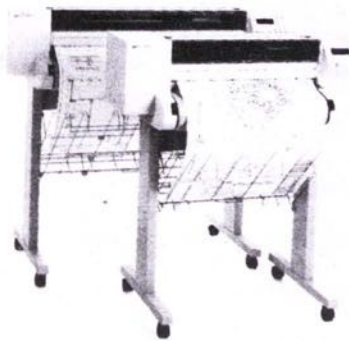
You can search for recipes by category (fish, appetizers, etc.), recipe name, ingredients, or cooking method. The search function came in handy when I found a recipe that called for phyllo dough. I long ago finished my 10,000-meal apprenticeship, but phyllo dough was a new one on me. There was no link for it to the glossary, but by using the ingredients search function, I found another recipe that described it and told me that I should be able to find it in the frozen foods section of the grocery store.

A new feature of this program is that recipes can be emailed to friends with a simple click of a button. Like most of these Internet connections in CD-ROMs, you must first log onto your Internet service provider and have it running in the background. (This only works under Windows 95. For Windows 3.1, you must still copy and paste the recipe into the email message.) □

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BOOKS

Cybergrrl perfect for Net neophytes

BY KEITH SCHENGILI-ROBERTS

The online world often seems like a very imposing realm to the "unwired." One person who has done her best to make the Web a more inviting place is Aliza Sherman, whose Cybergrrl Web site (<http://www.cybergrrl.com>) is designed to help new users—especially women—find the information they are looking for. Sherman has written a very approachable guide designed to answer all of the questions the unwired may have about the wired world, and what to do (and what not to do) once they get there. The resulting book is a good, personable guide to life online.

Cybergrrl! A Woman's Guide to the World Wide Web

Author: Aliza Sherman

Publisher: Random House

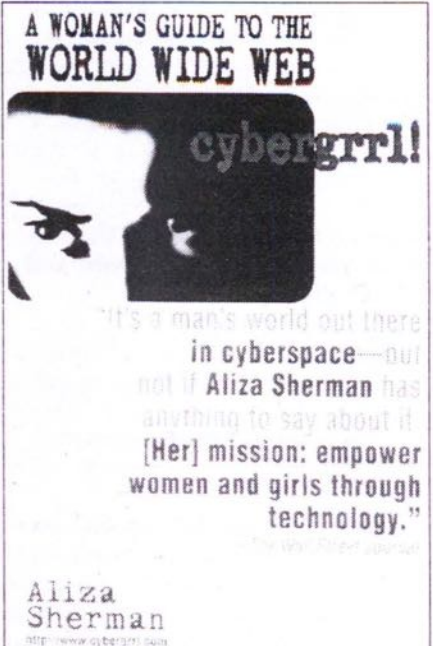
416-777-9477, <http://www.randomhouse.com/>

Price: \$16.95

ISBN: 0-345-42382-8

Softcover 273 pages 1998

Though ostensibly aimed at women, much of the technical information (which makes up the bulk of the book) is relevant to



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"Fantastic! Your service will help validate my internet expenses. Thanks."

"Your format is very user friendly, and I appreciate the service you provide."

"I would like to let you know that I think this is an excellent service."

"Hi Buy&Sell gang...fabulous feature, even better if I sell my car! Keep up the good work."

"I'd like to commend you people on all the hard work that it must have taken to set all this up. I have been using the Buy&Sell for a good number of years, and now just recently with my home PC. I have sold all the stuff that I have advertised in the Buy&Sell. Keep up the good work."

"Thanks, I was able to find what I was looking for during the period I was subscribed... Very nice layout for the site. Keep up the good work!"

"Just a quick note to say that your website is one of the 'friendliest' I've just used. I made a mistake on my ad and it was easy to figure out how to change it. Also browsed the car ads and found one that I was interested in. Great job."

"Just thought that I would quickly write and tell you how impressed I was with Buy&Sell on-line. It's amazing how many phone calls I received regarding the ping pong table I was selling. There were so many calls that it sold that Thursday night. Anyway, once again - thank you. Your system is very simple to use and it works!"

BUY & SELL
ON-LINE

BOOKS

either sex. Sherman is a good writer, and is able to put the worst technophobe at ease with her simple explanations of the more technical details of getting online. She offers a stripped-down, common-sense approach when it comes to advising readers on what computer to get for surfing the Web and why, the advantages and disadvantages with going with an online service (like AOL) or an Internet service provider (ISP), and what to look for once you are online.

What makes this book different from similar easy-to-read *Dummies*-style books is the author's perspective and experiences—and the experiences of others in the extensive anecdotes provided—she brings to the book.

Sherman covers the basics admirably well, demystifying the processes involved with using email, getting a Web browser, finding useful online resources, and, perhaps most importantly, how to have fun. These sections are concise and easy to read, though some people will find the book skimpy on technical detail.

The author spends more time on the different types of online venues available to users, like ftp, email, chat rooms and the Web. She not only looks at the how to use these tools but deals with the fine issues of "Netiquette": what to say and do, and more importantly, what not to say and do, when online.

For those people who are stymied by the many acronyms and odd terminology that is so much a part of the online world, Sherman provides explanations for all of these terms, something that is too often glossed over in other introductory books to the Internet.

The best part of the book is devoted to the many anecdotes from women who share their online experiences. There are interviews with the women who have created businesses online, who have found the Web is a whole new window to the world, and even a few who have met their husbands online. Sherman has also compiled an extensive index of sites primarily of interest to women, dealing with such issues as motherhood, health, and other information resources.

The only real drawback of this book is the lack of synthesis or analysis of women's experiences on the Net. While *Cybergrrl!* is a good book, it could easily have been much better. However, while pedestrian, the information in the book is well presented, and will allay the fears of anybody who wants to go online. □

Rating:
Information content: ***
Readability: ****
Intended for: Beginner
Overall Rating: ****/2

Editor and Publisher • NB—The online side of this magazine offers an excellent selection of resources for Web surfers. One of the highlights is the media links directory, which is fully searchable by city name, country, type of media, publication or station frequency and more. There's also news from the world of media, information on upcoming conferences, classifieds ads and more.
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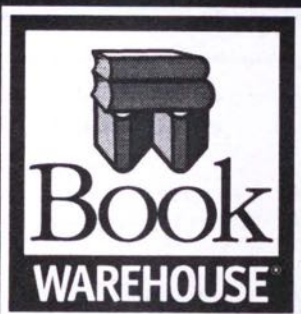
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BOOKS

Exam Cram a limited but useful study tool

BY KEITH SCHENGILI-ROBERTS

This title is one in a new series of books from Certification Insider Press, an offshoot of the Coriolis Group Books. The *Exam Cram* series is designed to aid people taking Microsoft Certified Systems Engineer exams. Designed as a supplement to certification study guides, it is filled with concise information about the subject and plenty of test exam questions and answers. It would be great if all computer books were written as concisely as this one is—far too many are bulked up to look impressive on a book shelf—but there are structural problems that reduce the overall usefulness of this book.

Exam Cram: Networking Essentials

Author: Ed Tittel, Kurt Hudson and J. Michael Stewart

Publisher: Certification Insider Press

distributed by ITP Nelson

800-268-2222, <http://www.coriolis.com/>

ISBN: 1-57610-192-4

Softcover 324 pages 1998

Price: \$41.99

So what does somebody who is cramming for an exam looking for in a study book? They want lots of substance without filler. Check—it would be hard to fit more

of the fundamentals of networking into a smaller book while still making it useful.

They also want plenty of sample examination questions to prepare them for the real thing. Check again—there are sample exam questions at the end of every section, and a full sample test at the end of the book.

Finally, they want the inside track on tips to help them ace the exam. Check, check, check—strewn throughout the book are little tips and trick questions that could easily trip them up.

Sounds great, but *Coles Notes* this book is not. There are unfortunately some structural problems with *Exam Cram: Networking Essentials*. It's good that the writers deliberately throw in trick questions, but it is definitely a mistake to throw in a little *Trick Question* graphic beside it as a warning. This doesn't make for a great learning experience as it is guaranteed there are no *Trick Question* graphics on the actual exam.

Save for the sample exam at the end of the book, all of the answers to the exam questions immediately follow the questions, and are highlighted. Again, it is hard to ignore the fact that the answer is (b) when it is staring back at you, highlighted and begging for attention.

While the content of the book itself is good and comprehensive, covering the subject from basic concepts and terms, to dealing with security issues and troubleshooting common networking problems, structural flaws like these are littered throughout the book, making it less than perfect.

If you are keen to pass your Microsoft Certified Systems Engineering exams, there's no doubt this book and others in the series will help you out. Still, *Exam Cram* books come second after the more comprehensive books they are modeled on, and the serious flaws in this book limit its impact as a learning tool. These books are good, but what is heartbreaking is that they could easily be much better. □

Rating:

Information content: ***1/2

Readability: ***1/2

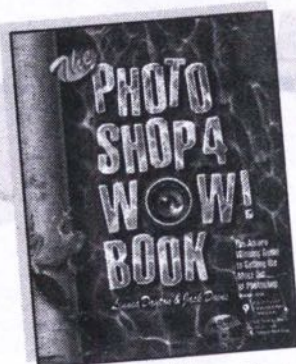
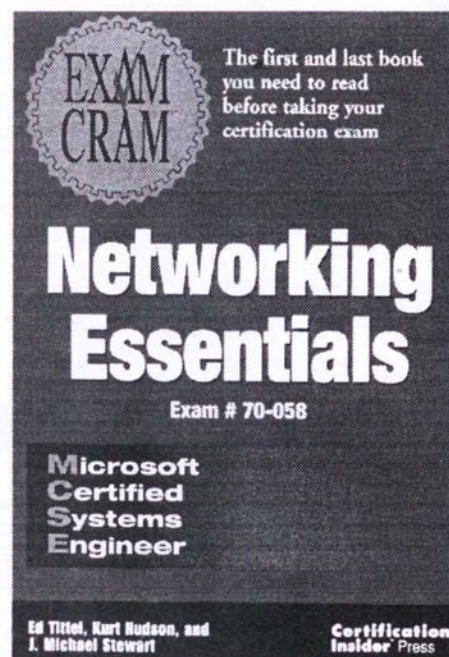
Overall Rating: ***1/2

In the Land of the Amiga Aliens

Continued from page 109

International Amiga 98, to be held on May 29-30, at the International Plaza Hotel and Conference Centre near Toronto's Pearson International Airport. Randomize says that a reviving Amiga community may show up 5,000 strong at this year's show.

To a degree only matched by the Apple Mac in its heyday, the Amiga computer was a catalyst that allowed users to express their creativity in the new digital media. In spite of the failure of the management that ran Commodore and the Amiga into the ground, some of those loyal users have carried the Amiga for the last four years. At some point, like all old computers, the Amiga will inevitably fade away—but not just yet. □



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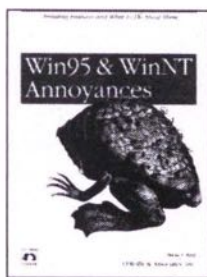
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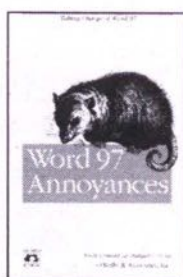


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David A. Karp

This book shows the beginner how to customize the Win95/NT operating systems through an extensive collection of tips, tricks, and workarounds. Covers Registry, Plug and Play, networking, security, multiple-user settings, and third-party software. Learn how to shape your operating system in a way that will not only make it most effective, but will also give you a great sense of enjoyment.

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Word 97 Annoyances

Woody Leonhard, Lee Hudspeth & T.J. Lee

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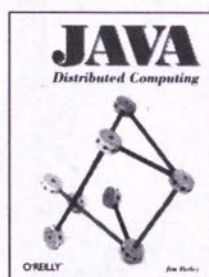


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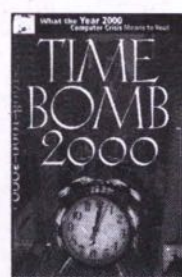


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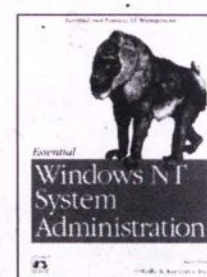


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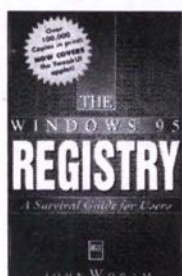


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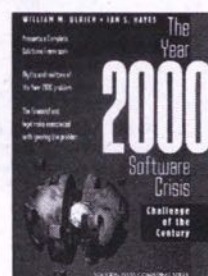


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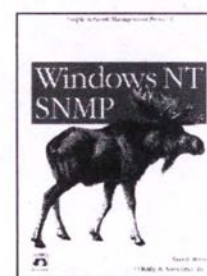


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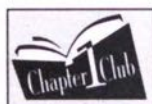
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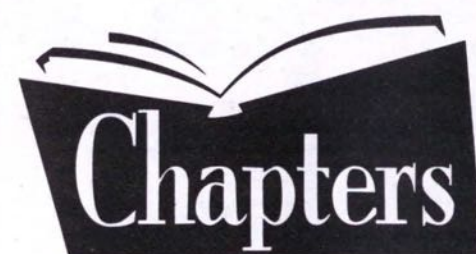


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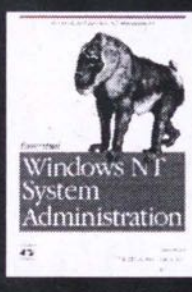
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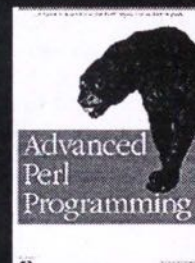
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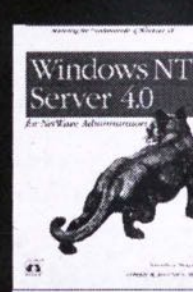
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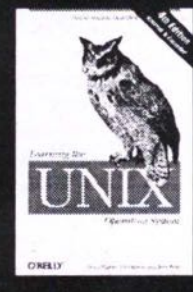
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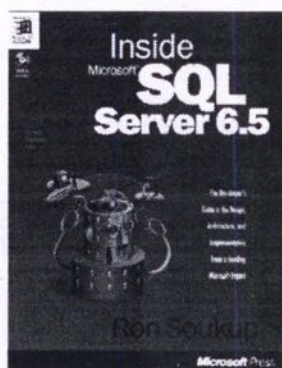


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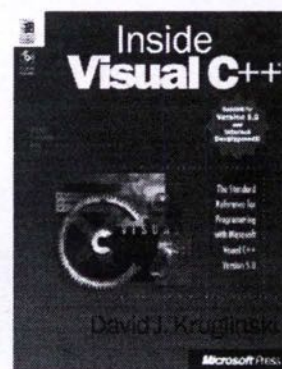
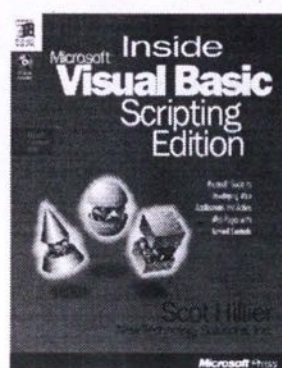
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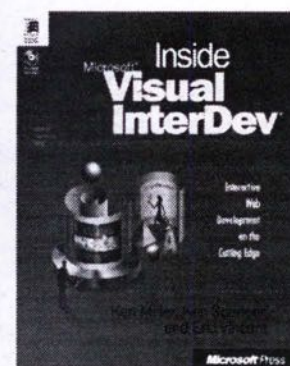
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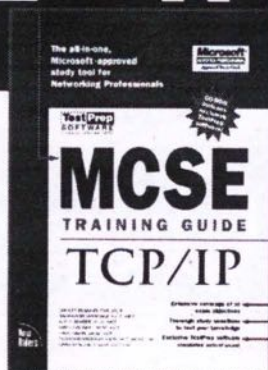
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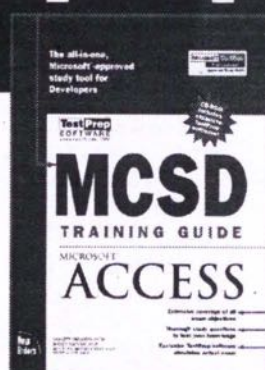
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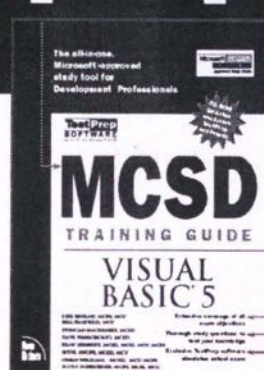
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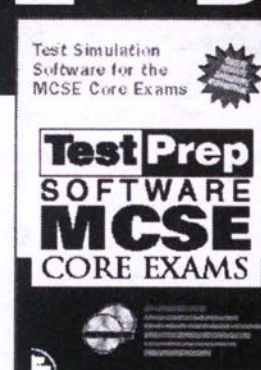
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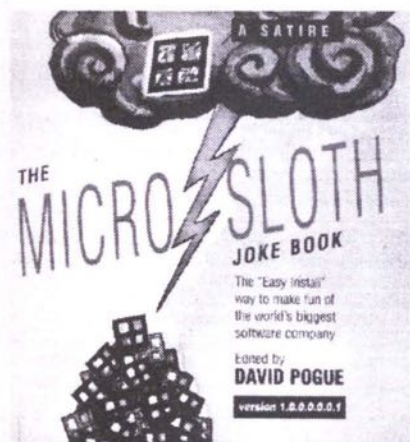


BOOKS

Microsloth jabs computing giants

BY KEITH SCHENGILI-ROBERTS

As anyone who frequents the many humor newsgroups or subscribes to a humor listserv, the Net is a funny place. There are plenty of would-be comedy writers out there, and given the medium they work in, one of the most popular subjects continually held up to ridicule are the firms that make the annoyingly buggy software and hardware these writers are currently using. As the largest software and hardware firms Microsoft and Intel are easy targets for the majority of jokes made posted to the Net. This book, compiled by editor and funny man David Pogue, is a compendium of some of the best humorous jabs aimed at these two companies.



The Microsloth Joke Book: A Satire

Editor: David Pogue
 Publisher: Berkeley Books
 212-951-8923, <http://www.berkeley.com>
 Price: \$13.95
 ISBN: 0-425-16054-8
 Softcover 154 pages 1998

Microsloth includes everything from classic light bulb jokes ("Q: How many Microsoft testers does it take to change a light bulb? A: We just notice that the room is dark. We don't fix the problems."), riffs on popular culture

Round about the terminal go;

In the poisoned upgrade
 throw, Code, which by a
 student done. In minutes

numbering 61, Run-time error,
 protection fault, Crash
 ye first, crash ye shalt

—If Shakespeare Used Windows 95,
 excerpt from *Microsloth*

script based on 2001: A Space Odyssey where HAL runs on a Pentium chip ("HAL: You must think I'm a fool, Dave. I know that two plus two makes 4.000001. Make that 4.0000001.").

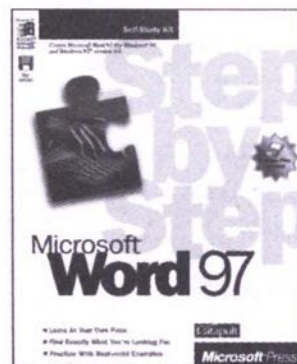
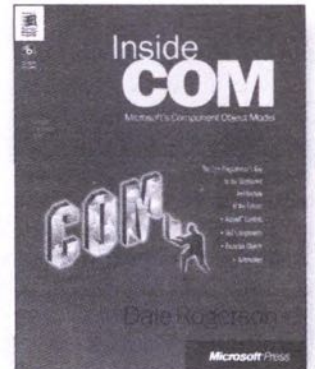
The book is fun, but at \$13.95, a bit

pricey considering how slim a volume it is (and especially considering that all the material can probably be found for free on the Net). It's all silly fun at Microsoft's and Intel's expense—but they can afford it. □

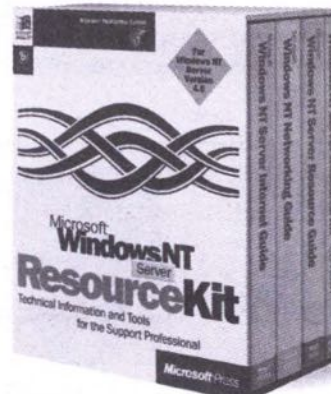
Rating:
 Information content: N/A :-)
 Readability: ****
 Intended for: All
 Overall rating: ***

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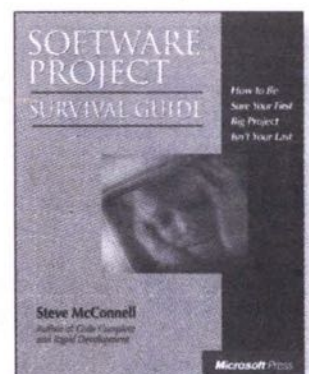


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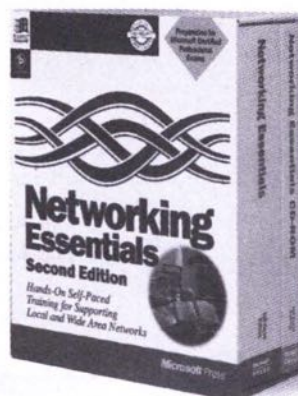


Microsoft Windows NT
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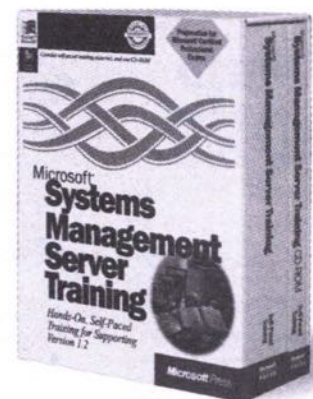
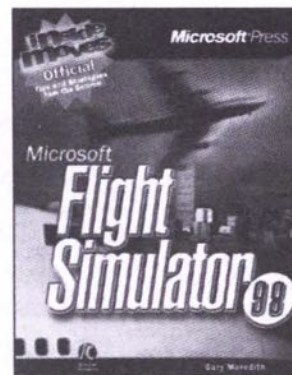
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BOOKS

Book helps open your Web site to the world

BY KEITH SCHENGILI-ROBERTS

Sometimes it is easy to forget that the first "w" in "www" stands for "world." Chances are the majority of Web sites you visit are physically located in North America, and are written in English. The majority of Web servers in the world are located in either North America or Europe, and English is frequently referred to as the working language of the Internet. This state of affairs is changing as more and more countries get online. As a result, businesses are catering to this burgeoning audience by providing Web pages in languages other than English. But how exactly do you do this? Though not as comprehensive as it claims to be, *How to Build an International Web Site* is a good starter guide for those who are interested in making their Web site truly international.

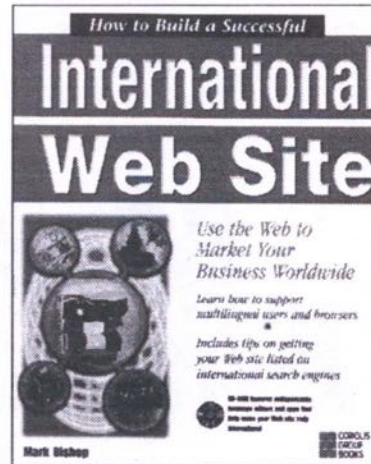
This how-to book contains all of the basic information you are likely to need. If you want to make the argument to your manager that there is a market outside of North America, Bishop provides stats that display the rapid growth of Internet access in foreign lands, and how to track down software for the parts of the globe your customers hail from.

How to Build a Successful International Web Site

Author: Mark Bishop
Publisher: Coriolis Group Books
800-268-2222, <http://www.coriolis.com/>
Price: \$34.99
ISBN: 1-57610-158-4
Softcover 299 pages 1998
Comes with a CD-ROM

If you are completely new to this, Bishop shows you how to set up your browser to properly view sites created in other languages. There are plenty of links to software manufacturers that can help you develop multilingual Web sites (demo versions of which are included on the CD-ROM that comes with the book). The beginning of the book provides all the tools you will need—downloadable fonts, multilingual Web editors, graphic formats to use and even translation agencies that can help you put up a Web site.

So once you know how to make an international Web site, what next? Bishop looks at how to register your site with International search engines, the particular



Net etiquette of various cultures, plus the sort of headaches you and your potential customers can expect from such things as government bureaucracies and shipping agencies.

How to Build an International Web Site may seem comprehensive, and it will certainly answer a lot of questions for the Webmaster contemplating making her site multilingual, but it does not answer many key practical questions. While there is plenty of information on how to make your Web site multilingual, there

are no case studies that show you how particular companies tackled the problem of reaching particular audiences. There also seems to be a particular emphasis on setting up sites catering to Asian languages—this is great for anybody who wants to set up a Web site aimed at this audience, but not so great for people who want to set up truly international sites that cater to other languages.

This book aims to be comprehensive in its subject, but falls short by not adding enough practical examples of how to create a whole multilingual Web site. In short, *How to Build an International Web Site* is a good primer and an initial resource, but don't expect it to meet all of your needs if you are setting up an international Web site. □

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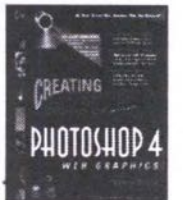
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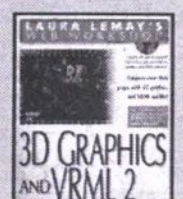


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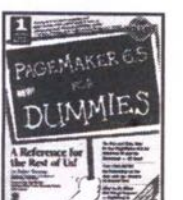


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BOOKS

Instant title offers solid HTML advice

BY KEITH SCHENGILI-ROBERTS

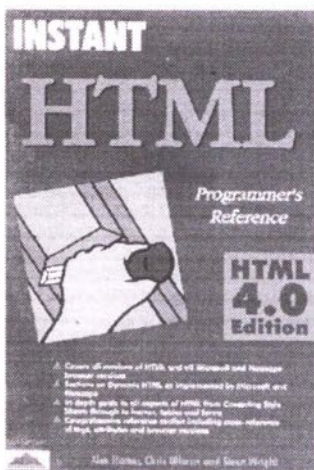
What is it with all of these "instant" books? It's not as if you can put a book like this on your head and learn hypertext markup language (HTML) through osmosis. But if you could, this would be a good book to absorb directly into your gray matter. If you are more traditional and are willing to spend the time reading, you'll find this book is an excellent reference. Though it isn't as current as I'd hoped it would be, *Instant HTML* is one of the better HTML references you are likely to run across.

The result is that a number of tags are not covered in this book. But given the rapid pace of change in the Web authoring community, this book is as up-to-date as you can expect.

Despite the marketing ploy that labeled this book "instant," which may lure a few

unwary beginners to this title, it is a solid book on HTML. It is a good reference that will help a moderately experienced Webmaster who needs to look up something quick, or who needs to brush up on some of the basics of scripting or CSS. □

Rating:
Information content: ****
Readability: ****
Intended for: Intermediate/Expert
Overall rating: ****



Instant HTML: Programmer's Reference, 2nd Edition (HTML 4.0 version)

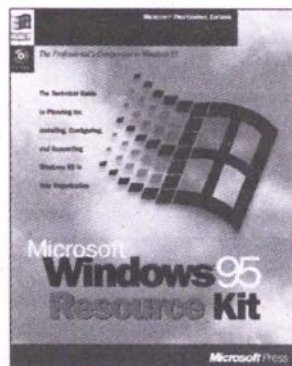
Author: Alex Homer, Chris Ullman and Steve Wright
Publisher: Wrox Press
800-873-9769, <http://www.wrox.com/>
Price: \$27.95
ISBN: 1-861001-56-8
Softcover 433 pages 1997

Don't be fooled by the silly title—it is only "instant" HTML if you already know something about the subject and you have an idea of what you are looking for. While the title may imply something different, the book is for people who are already familiar with Web basics and are simply looking for a guide to the latest version of HTML.

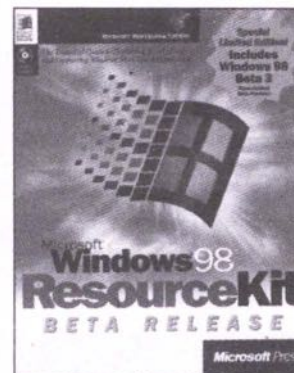
The book covers its subject admirably, detailing the functions and characteristics of every available HTML tag. Wrox Press has always excelled at providing books on programming principles, and this book is no different. If you are looking for a good, brief introduction to scripting languages like JavaScript or VBScript, you'll find it here. Other sections of the book are devoted to exploring such things as new tags in Netscape Navigator and Internet Explorer, cascading style sheets (CSS) and plenty more. On top of all of this you will find several good appendices that provide a quick reference of HTML tags, scripting methods and CSS; if you want to find out what tags or CSS elements are supported in which browser, you will find it here.

Nevertheless, beware of any book you see in the next couple of months that claims to cover HTML 4.0. The final 4.0 specification came out in late December, and there were a number of last-minute changes that were not hinted at in earlier drafts of the specification.

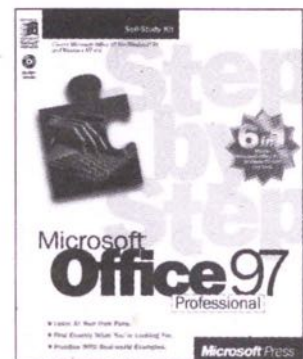
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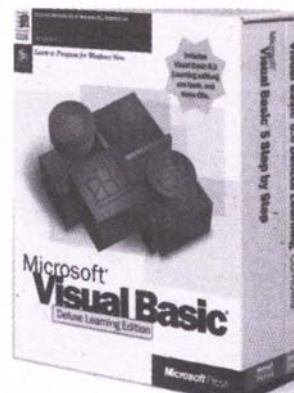
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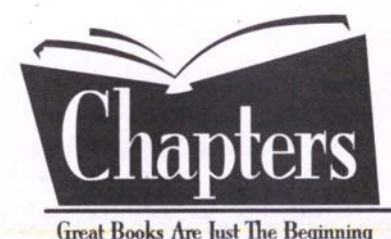


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Researchers report computer crime boom

BY CRAIG MENEFFEE

SAN FRANCISCO, Calif. (NB)—The U.S. economy is not the only thing booming these days. San Francisco's Computer Security Institute (CSI) says computer crime is also booming south of the border, with outside breaches, rather than internal ones, growing the fastest.

CSI, a professional association for security personnel, described the "wired world" as becoming "increasingly dangerous" in 1997, with breaches up in all categories compared to previous years. Patrice Rapalus, CSI's director, said technology won't fix the situation because it is not entirely a technological problem.

"I don't think there is any kind of technological silver bullet. I think a greater emphasis should be placed on educating and training computer users to safeguard the information they see," she explained. "Technology plays a vital role, but it's not the only component in computer security."

She said extra security education should go to technical staffers who configure systems so they can learn the latest threats and counter measures. Also, end users should be made aware there really is a security risk and they do need to comply with security procedures and policies, Rapalus told Newsbytes.

The survey findings were released in the third annual *Computer Crime and Security Survey*. CSI conducts the survey annually with the FBI to scope out the extent of U.S. computer crime make the public more aware of it. The 520 surveyed "security practitioners," as CSI calls them, mostly work for U.S. corporations, government agencies, financial institutions, and universities.

CSI says nearly two-thirds (64 percent) of the respondents said their organizations had suffered security breaches in 1997. That figure is up 16 percent over the previous year. Nearly three-quarters (72 percent) said breaches had cost money, although only a minority (46 percent) could or would put a number to the losses. The losses for which they did report a value came to \$136,822,000—an increase of 36 percent over the 1997 survey's reported \$100,115,555 loss figure.

Newsbytes notes \$136.8 million is not a huge number when compared with total U.S.

computer-related revenue streams, a number orders of magnitude higher. Still, it is not trivial and the FBI says it's only a fraction of the real loss. Many companies still do not report security breaches, fearing breaches would look bad to investors and the public, say FBI sources.

Among breaches that did get reported, 44 percent of respondents said their companies' own employees made the attacks. Other serious breaches included denial of service attacks (25 percent), outside penetrations (24 percent), theft of proprietary information (18 percent), financial fraud (15 percent), and data or network sabotage (14 percent).

The most serious dollar losses still come from large-scale insider shenanigans. About \$50.6 million or 40 percent of the total \$136.8 million lost was reported by only 18 respondents and was due to insider thefts of various kinds. Another 20 respondents reported \$33.5

million lost to theft of proprietary information. Thirty-two respondents reported \$17.3 million lost to telecommunications fraud while 29 respondents reported \$11.2 million in losses to computer-related financial fraud.

In the area of increased outside attacks, Internet connections were named as a source of serious attack by 54 percent of the respondents, up from 47 percent the year before and 37 percent in the baseline 1996 study. CSI's Rapalus said the results show companies "may think that they are spending the requisite amount" on security but "the dramatic increase in quantified dollar losses indicates otherwise."

Details on the study can be found on the Internet at <http://www.gocsi.com>. □

"I think a greater emphasis should be placed on educating and training computer users ...technology plays a vital role, but it's not the only component in computer security."

—Patrice Rapalus, director CSI

Network '98 • NB—This online magazine is published monthly by the Professional Presence Network and is aimed at Web developers and Internet marketers. Most articles are written by members of the group, all of whom are experts in their subjects. Back issues of the magazine, and its predecessor Network '97, can also be found online. The main language of the publication is English although some articles may be written in other languages, such as German and Dutch.

Web site: <http://www.ppn.org/net98/>

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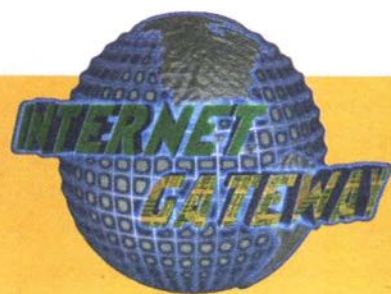
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■ TUCOWS SHAREWARE

Filters help tame Usenet content

These days, cowboys ride digital signals to the rowdiest place on the Internet: the Usenet. The uncensored, "anything goes" atmosphere of the Usenet is the key to its popularity. This arena now features more than 26,000 newsgroups, and the growing volume has caused some Internet service providers to consider carrying limited feeds. Others have experimented with carrying full feeds at additional cost. Most agree that some kind of restructuring will be required in the next year or so to ensure that it remains stable.

While the signals carried through the Usenet are growing, so is the "noise." Some systems administrators I have spoken to estimate more than half the content of the Usenet comes from spam, flame wars and newsgroup-bombing by abusive participants. It can be difficult, if not impossible, to follow the flow of conversation in some groups. The rude and the strange threaten to drown out any semblance of conversation on some groups, while others are filled with inappropriate binary postings or adult material. At the same time, a good group can be a goldmine of information. It can be difficult to keep up with your interests if you don't have a good reader to help you filter out the signal from the noise.

Anawave's Gravity



Version: 2.0
Revision date: Dec. 1, 1997
Filename: gravity.exe
Byte size: 2,250,718
Licence type: Shareware
Home page: <http://www.anawave.com/gravity/index.html>
NT compatible: Yes

Gravity was designed exclusively for the 32-bit Windows 95/NT environment. This provides excellent multi-tasking capabilities for searching, sorting and completing many tasks in the background. As a result, you get the information that you want—blazingly fast.

Free Agent



Version: 1.11
Revision date: April 25, 1996
Filename: fa32-111.exe
Byte size: 1,052,700
Licence: Freeware
Also available: Windows 3.x Version
Home page: <http://www.forteinc.com/forte>
NT compatible: Yes

Free Agent is one of the most popular free-ware newsreaders, because it offers one of the easiest interfaces. Features include a 100,000-plus word customizable dictionary, auto-decode of binaries, filtering to ignore or highlight messages based on author, subject or length of post, automatic launch of your browser by clicking on a URL, and more. The commercial version, Agent, offers enhanced capabilities and is more popular with experienced Internet users.

WinVN



Version: 0.99.9 Official Release
Revision date: April 5, 1997
Filename: wv32i999.zip
Byte size: 359,976
Licence: Freeware
Home page: <http://www.ksc.nasa.gov/software/winvn/winvn.html>
Also available: Windows 3.x version
NT compatible: Yes

WinVN has all the basic features expected of a well-rounded Usenet reader. WinVN offers a simple point-and-click interface. You can view multiple articles simultaneously and set multiple simultaneous news server connections. WinVN's filtering and search functions are limited, but it's fast and easy to set up.

MAC pick: Newswatcher



Version: 2.3.5
Revision date: Oct. 1, 1997
Filename: tu cows_mtnewswatcher.hqx
Byte size: 1,152,869
Licence: Freeware
Home page: <http://www.santafe.edu/~smfr/mtnw/mtnwswatcher.html>
Author: Simon Frazier

Newswatcher is an NNTP newsreader for the Macintosh. Features include threaded topic format, automated binary extraction, drag manager support, reply by email, optional Internet Config support, and more. Several different versions on TUCOWS, enhanced by different users and programmers, that offer additional preferences and tools, such as spelling and speech recognition.

OS/2 pick: Binary News Reader



Version: 1.29
Revision date: Nov. 6, 1997
Filename: bnr129.zip
Byte size: 308,368
Licence: Shareware
Home page: <http://www.bmtmicro.com/catalog/bnr/>
Binary News Reader is an application designed to aid in the retrieval and decoding of binary files posted in Usenet newsgroups. You can receive and decode marked articles while you

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5 Cows is our top rating.

view and select the next files. Filtering includes the ability to remove article headers containing less than a specified number of lines. Binary News Reader also supports a simple scripting language that enables you to automate almost everything you normally do manually.

Pilot pick: NetNews



Version: 1.0
Revision date: March 23, 1997
Filename: netnews.zip
Byte size: 9,352
Licence: Freeware
NetNews is a basic NNTP read-only browser for the Pilot Professional. You must know the names of the newsgroups you want to read because NetNews does not currently support loading a full group list. Articles you have read are marked with a dot, but will not be remembered once you close a group. This application

Continued on page 124

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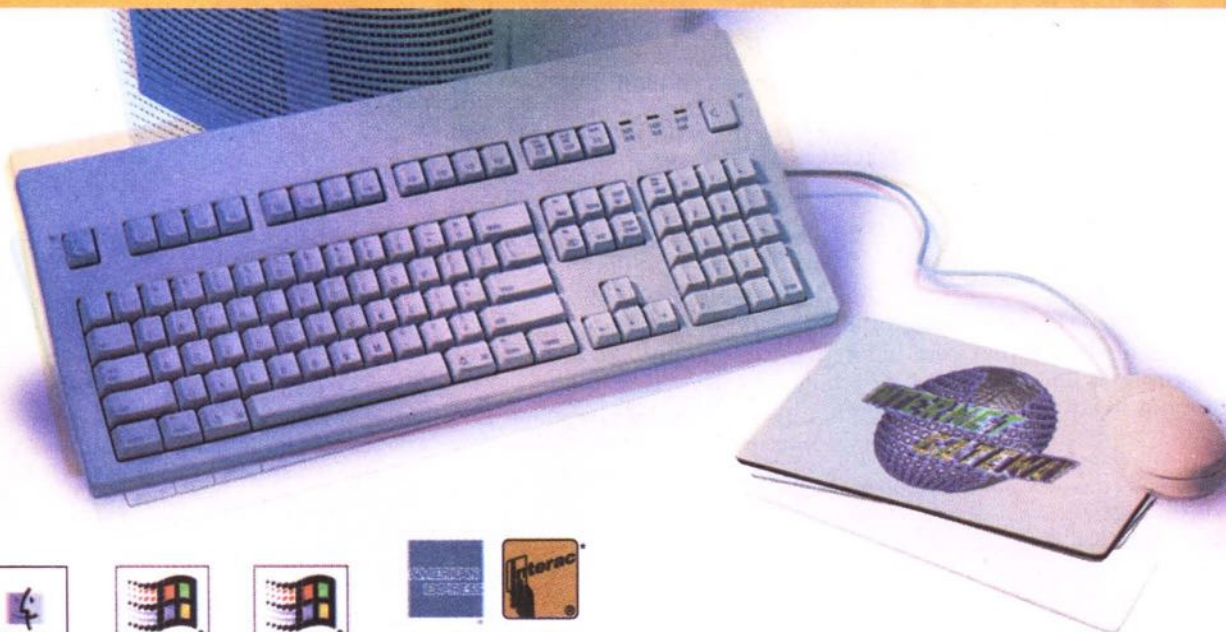
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ONLINE

Keith's top ten vintage radio sites



Besides being the itinerant *Weaving your own Web site* writer, book reviewer, Webmaster, and TCP regular (who writes this monthly feature) Keith Schengili-Roberts is a sucker for older technologies—particularly radio. Besides being a member of the London, Ont. Vintage Radio Club (<http://www.geocities.com/Colosseum/4884/more3.html>), Keith also created the second site on the Web devoted to antique radio sets (<http://www.interlog.com/~kschengi/radios.html>) a few years ago. At last count there were well over 200 such sites. Everybody's got to have a hobby...—Keith Schengili-Roberts

located in Guelph, Ont., and run by a long-time ham operator and general radio buff. His museum (open to the public) now holds over 1,000 radios. His Web site gives you a peek at some of them.

<http://www.kwarc.on.ca/hammond/index.html>

3. eBay Auction House Listings: Radios

eBay is an online auction house that has become the most popular place on the Web for people to sell radios and related gear. This listing of radio-only material is well worth checking out—there are typically several dozen new sets available daily.

Main page: <http://www.ebay.com/http://cayman.ebay2.com/aw/listings/list/category132/index.html>

4. MZTV Museum • Toronto media mogul

Moses Znaimer has a passion for old television sets, and created this museum. It includes a virtual gallery of early TV sets,

1. Antique Radio Classifieds • A monthly American publication for buyers and sellers of old radio items. Contains some good articles and galleries, plus an extensive online book catalog for the would-be restorer.
<http://www.antiqueradio.com/>

2. Hammond Museum of Radios • This is an incredible little museum of radios

Filters help tame Usenet content

Continued from page 122

will only work on a PalmPilot Pro because it requires the PalmOS Network Library, which is built into the professional ROM.

Browser options

Netscape Navigator and Microsoft Internet Explorer offer full-featured news and email readers, which are excellent alternatives to the standalone newsreaders. Check out your browser's Usenet features when deciding on a newsreader. They tend to have cumbersome binary-handling features, but they may allow you to preview binaries inside

the message before downloading. Experiment with a variety of newsreaders. Some focus on the binary and file groups, others give more support to discussion and text editing functions.

Want a fast, simple search across the Usenet? Check out DejaNews (<http://www.dejanews.com>). Using DejaNews, you can keyword search the entire Usenet. The list of matches gives you an instant idea of how popular the topic is, and where to find the conversation when you're not sure where to start. It provides a much faster and more accurate search than those offered by any of the PC newsreaders. □

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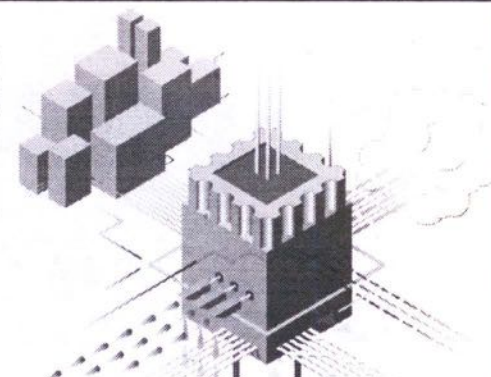
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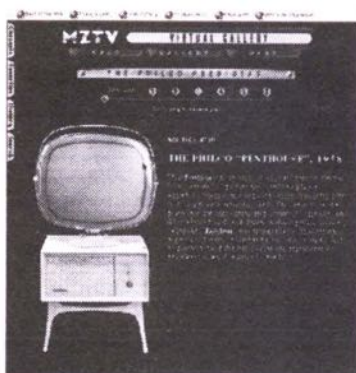
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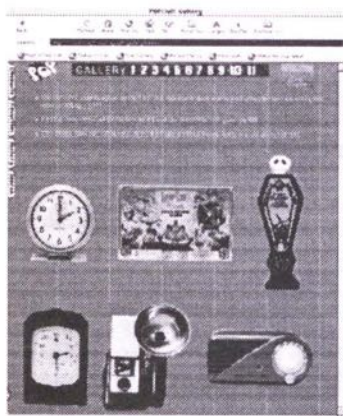
ONLINE



including special sections on the Philco Predicta and mechanical TV sets of the 20s and 30s.

<http://www.citytv.com/mztv/mztvhome.html>

5. Popular Culture • The site hasn't been



updated for a while but Popular Culture is probably the Toronto collector's best source for antique radios. Besides radios there are plenty of other pop culture items to be found here, ranging from comic books to funky furniture.

<http://www.magic.ca/popcult/>

6. Nostalgia Air • Aimed at the techie, this is the place to go if you are looking for schematics for old radio sets. Well over 100 different manufacturers are listed, ranging from Acme Electric to Zenith.

<http://www.cyberhell.net/NostalgiaAir/index.htm>

7. Antique Radio Page • Don Adamson has created a beautiful, stylish set of Web pages displaying over 160 radios ranging from tube radios of the 1920s to transistor sets of 1960s. This site stands out from the rest due to his ARP Directory, an ambitious project aimed at cataloging all vintage radios found on the Web!

<http://members.aol.com/djadamson/arp.html>

8. Phil's Old Radios • This was the first



Web site devoted to antique radios—and it is still one of the best. Well designed and laid out, it contains a wealth of information for antique radio restorers/collectors. Check out the extensive gallery of primarily 1940s- and 1950s-era plastic radios, information for neophyte collectors, and links to other sites. There are very good sections aimed at the beginner, general info, and restoration info.

<http://www.accessone.com:80/~phil/>

9. Classic Radio Gallery • Merrill Mabbs' well-designed Cyberspace Museum has a push-button interface to connect to the gallery of your choice: wooden sets, plastics, speakers or radios for sale.

<http://cpu.net/classicradio/>

10rec.antiques.radio+phono FAQ • This has got to be one of the most comprehensive (and lengthy) frequently asked questions (FAQ) Usenet newsgroups. If you are trying to date an old set or look for a dealer in your area, go to this FAQ first.

<http://www.cs.ruu.nl/wais/html/na-dir/antiques/radio+phono/faq/.html>

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GAMES

Tilt and swing

What's Playing looks at new pinball and golf titles

BY GORD GOBLE

Most duffers out there know that one of golfing's greatest pleasures comes from the game's final hole, the 19th, where you kick back with a pop and discuss the day's birdies and bogies over a game of...pinball. Yeah, that's right, pinball.

And that rather forced segue leads us into this month's column o' games, a look at GT Interactive's futuristic pinball title *Balls of Steel* and Accolade's Jack Nicklaus 5, the most recent update of its superb golf game. And with a "Fore!" and a "Tilt!", we're on our way...

Balls of Steel

From: GT Interactive Software Corp.

Tel: 800-469-5961, <http://www.gtgames.com>

Minimum system requirements: Pentium 100 MHz processor, Windows 95 with DirectX v3.0 (or better), 16 MB RAM, 1 MB VESA-compatible SVGA display card, DirectX-compatible sound card. 2x CD-ROM drive, 70 MB available hard drive space.
Street price: \$45

PC pinball ranges from the ultra-authentic (Amtek's 8 Ball Deluxe) to the bizarre and fan-

ciful (Sierra On-Line's 3D Ultra Pinball). On one hand, you'll find a painstaking recreation of all the nuts and bolts of a real analog table; on the other, environments and virtual effects that simply could not take place in the real world.

But for those who enjoy a little of both, a game that mimics the layout and action of the traditional game and adds a few computer inspired perks, there's GT Interactive's latest pinball extravaganza, *Balls of Steel*. Mixing physics and ball action similar to what you'd find down at the local arcade with high-tech effects and animations like fire-breathing dragons and assorted alien life forms, *Balls of Steel* takes pinball to a new digital level without losing sight of its roots.

Steel offers five theme-based tables, each featuring a wealth of individual missions, games-within-games, upper table intricacies, hidden treasures, ramps, thumpers, extra flippers and multiple balls. Occasionally, the more talented among us will be asked to participate in extracurricular video games on the dotpanel (the lighted readout that displays your score on a real table), while the truly gifted can automatically post their top scores to the WorldScores Internet Rankings site.

So, what appeals to you? Perhaps Steel's default opener, the medieval Barbarian with its dragons and sorcerers and penchant for extremely high scores. Maybe the slimy sci-fi world of Mutation strikes your fancy, or the 4-flipped Duke Nukem (yep, he's here too) with its unconventional approach and explosive sound effects. Firestorm offers variable plunger speed and two extra side-by-side paddles up top for a mini-table within the first, while Darkside is a ramp-heavy alien-themed exercise with ample opportunity to "play" the dotpanel.

Whatever your game, Steel allows you to adjust your top-down perspective from full screen to scrolling, and set detail levels to compensate for the speed of your equipment. On that note, I found gameplay to be quite adequate even on a machine with Pentium 90 MHz processor, though, due to an acknowledged conflict with Rendition-based video cards, Steel suffered mightily on my PC with a Pentium 200 MHz processor! Fortunately, GT says a patch is on the way.

Steel doesn't get into the true-to-life intricacies of table, bumper and flipper settings, yet it does feature table "nudges" and an impressive gravity-dependent ball—though it is a heavy gravity indeed that makes for fast-

moving gameplay. Modifications to game speed or difficulty are not permitted and sadly, you won't be able to use your mouse as an analog plunger.

Not nearly as violent as the Software Industry Rating might lead you to believe, *Balls of Steel* does mix minor comic book mayhem with its mostly inoffensive pinball stylings. It almost goes without saying that you've got to love the game of pinball to begin with, but for those who do, both purists and children of the digital age should have a lot of fun with this one.

Jack Nicklaus 5

From: Accolade

Tel: 800-245-7744, <http://www.accolade.com>

Minimum system requirements: Pentium 120 MHz processor, Windows 95, 4x CD-ROM drive, 16 MB RAM, video card capable of 640x480 in 16-bit colors, keyboard or mouse.

Recommended system requirements: As above with Pentium 166 MHz processor, 20 MB RAM.

Street price: \$55

Alright, so it's been just six scant months since

Continued on page 130

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MAC ARENA

Umax puts G3 chip in clone carton

BY SAMI MENEFE

FREMONT, Calif. (NB)—Umax Computer Corp. is shipping its Mac clone Maxpowr Pro + G3 processor chip in the carton with its SuperMac S900Base systems W/G3 instead of inside the system box itself. The firm sees it as a way to avoid Apple Computer's cloning licences.

A spokesperson said Umax has dropped the price for this unit more than US\$1,000 since November and has doubled the basic warranty to two years on all S900 systems sold after March 1. In November, the full-size tower system cost more than \$4,000 and customers had to send in a coupon to get a G3 chip, usually a two-week process. Now the firm skirts the licensing agreement even closer, packing the G3 chip inside the carton.

But it's not installed inside the machine. Some observers have called this a nose-thumb at Apple's interim chief executive officer Steve Jobs, who pulled the cloning licence last year. "This is a way for Umax to get around Apple's licensing problem and still makes it one step easier for our customers to get the computing power they want," acknowledged the Umax spokesperson. The spokesperson said very detailed instructions are included with the system, written so users won't be afraid to install the chip themselves, if they want. It doesn't take long for users to open the system case and "simply take the installed PowerPC 604 150 MHz processor chip off the motherboard" and replace it with the more powerful G3 chip, he said. The system will then be fully Macintosh OS-compatible since the Maxpowr G3 chip has a 250 MHz processor, with 1 MB of backside cache running at 166 MHz.

Once the Pro + G3 card, made by Newer Technology, is installed, the firm says the SuperMac S900Base w/G3 will be 100 percent Mac OS-compatible, because the system is based on the PowerPC processor and has the Tsunami motherboard design of previous Umax S900 computers and Apple Computer's 9500 line. By increasing basic warranty on the S900 series systems from one to two years, the firm said it will set an industry standard to give customers the "most complete service package available in the Mac market today," he said. The spokesperson said, "We increased our warranty period to let our customers know we're not going anywhere, that we'll still be here for them." He added, "It also lets them know we really believe in our product, and it is just that much better with the G3 chip." Customers can access the Umax service and support plan, the online support library called KnowledgeBase and post their own "support cases" on the firm's Web site. "Umax stayed around when Motorola and Power Computing died, because we are willing to work with Apple and stay out of their face with our demands," he said. "Umax wants to fill a market that we feel Apple's business model doesn't allow them to come into—the below US\$1,000 system range."

"And on the high end, in the G3 range, Umax is the only system with expandability and storage capability in our price range," he said, describing how the various systems compared with the SuperMac S900 specifications and price range. "We feel we are the only vendor which can provide the kind of high-end

graphics arts that desktop publishers and digital video creators in our price range," he said. The estimated street price for the S900Base W/G3 is US\$2,995. Additional features included with the SuperMac S900Base W/G3 system are a 24x SCSI CD-ROM, a 4 GB 7200 RPM

SCSI hard drive, 4 MB IXMICRO TwinTurbo video card, 64 MB Interleaved RAM, and 10Base-T Ethernet for out-of-box network connectivity. The system has eight DIMM slots for a potential of up to 1 GB of memory, four unused drive bays, and a total of 6 PCI

(Peripheral Component Interconnect) slots if the user wants to add Umax's optional E100 card for 10/100Base-T Ethernet and Internal/External Ultra SCSI on one slot. □

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MAC ARENA

Helix Express faster, still easy to use

BY PETER MILBURN

Helix Express is a refreshing anomaly in the universe of software. In the 12 years since its inception, it has steadily grown in sophistication while retaining a lean and mean design.

Helix Express 4.5.1

From: Helix Technologies

847-465-0242

<http://www.mcs.com/~hstech/>

System requirements: 68020 or higher Macintosh or any Power Macintosh (recommended). System 7.1 or later, 2 MB available RAM, 2 MB hard disk space.

Retail price: \$795

The entire relational database application, along with its utilities and help file, takes up a miserly 1.9 MB of hard disk space and only requires a minimum of 2 MB of RAM to launch and run—a far cry from the gobs of resources needed to run many of today's applications. Furthermore, its drag-and-drop installer is so quick and effortless I was up and running in no time at all.

Conceptual overview

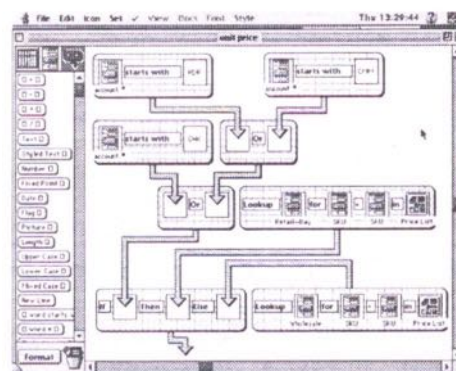
Helix is one of the original dozen or so applications that first appeared on the Macintosh,

and it takes a very unique and radical approach to relational database design. Helix Technologies defines the product as an icon-based, object-oriented, non-procedural information management and decision support system.

Sounds impressive, but what does it mean? It means that people who aren't programmers can quickly and easily create powerful relational database business solutions without the hassle of having to think in programming code. Most traditional relational database management systems require having to learn either a programming or data definition language.

Not so with Helix. Instead, Helix uses a visual, layered, object-oriented environment within which the user defines the dynamic relationships between data. This sounds more complicated than it really is. The best way to grasp the Helix concept is to actually try the product for yourself.

Helix's topmost object layer starts you off by letting you first define any relations that your data will reside in, as well as users and any sequences (macros) that you wish to set up at the time. Opening a relation by double-clicking on it reveals Helix's eight basic "atomic" building blocks: the field, abacus, template, view, index, query, power query and post icons. Like human DNA, these elements are the wellspring that enables you to perform



incredibly diverse and complex manipulations on your data.

One of the beauties of this object-oriented approach is that, unlike using a programming language, you don't have to totally pre-define your system before you build it. Instead, you can build and change elements "on-the-fly" thereby allowing your database application to gracefully evolve as your future requirements change. In essence, it gives you the capability to do rapid development, testing and deployment concurrently. This enormous flexibility is one of Helix's greatest strengths.

Another advantage to this design approach is that it doesn't allow you to accidentally delete elements of your structure (which would cause the dynamics of the system to break down). For example, if you've attached a posting operation to a specific form and later on decide to delete the related post icon, Helix won't allow you to throw it in the trash unless you detach the post operation from the form in question. Fortunately, Helix has built-in tracking of object relationships so you don't become hopelessly lost trying to track down object links in large collections.

Despite all of these advantages, Helix still relies on good human judgment when it comes to efficient structure design. Careful consideration of which data will reside in which relation, and when to create a new relation will go a long way to helping you easily get out of your database the information you want. Interestingly, Helix will actually assist you with optimization by warning you when to build an index on a field.

Once you have designed your database, you can assign various users form permissions. Then you can proceed to design individual pull-down menus by using a slick drag-and-drop method. For those interested in managing digital documents, you'll be pleased to know Helix has ODMS capabilities built into its development environment. This simply means any Mac document can be embedded in a field and manipulated like any other data type.

One aspect of Helix that could be improved is its "Template" environment. More refinement and precision should be implemented in its drawing and text editing capabilities. More importantly, I would like to see Helix Technologies port Helix Express to Apple's next-generation Rhapsody operating system so database applications can be deployed on both PowerPC and Intel processors.

Speed enhancements

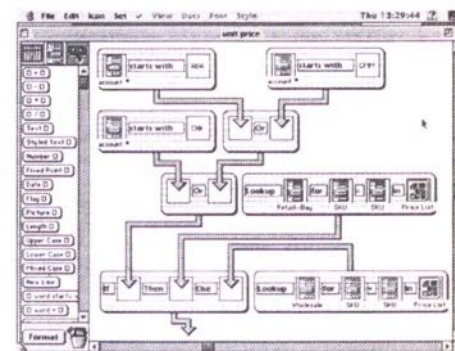
All of the development effort in this version of Helix went into fine-tuning the code for speed enhancements. Many of the repetitive

operations, such as entering/deleting data, querying, posting and displaying of lists, have been increased from 15 to 90 percent. If you want Helix to really perform its best, I recommend running it on a Power Macintosh.

If you decide to deploy your database on a network, Helix is a snap to set up with its client-server packages. The program's architecture has always been optimized for AppleTalk/Ethernet network transactions, however, if you plan on deploying a Helix database application in a multi-user environment it is highly recommended you use Ethernet.

Scripting and the Web

Helix has recently added seamless Internet access to its databases by enabling Apple External Event Access. AEEA now also fully supports the Frontier scripting environment. In essence, these technologies gives users the ability to remotely enter and retrieve data from a Web-based Helix application using an external program.



Unfortunately, this is an area where Helix's legendary ease-of-use begins to break down. Those who are used to the visual metaphors of the mainstream application will find that they are entering the "twilight zone" with AEEA and Frontier. At this point its probably best to leave any Web-related tasks to a qualified programmer.

The bottom line

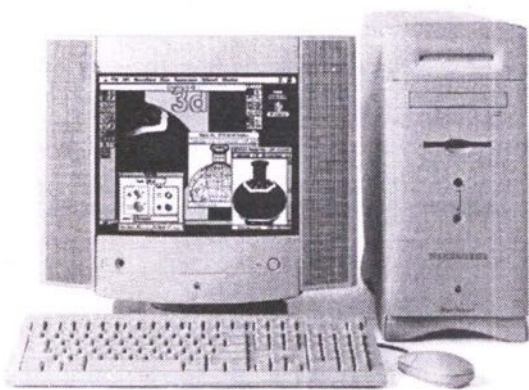
Helix is one of those programs you have to experience to truly appreciate. I've only briefly described what is a very rich and elegant environment for rapid database development. Helix conclusively demonstrates that the Mac is a highly capable database platform. If you're looking to quickly build a powerful relational information system for your business and you need more sophistication than FileMaker Pro, but don't want the programming hassles of 4th Dimension, then you should take a serious look at Helix Express. □

Peter Milburn can be reached on the Internet at elite@cadvision.com

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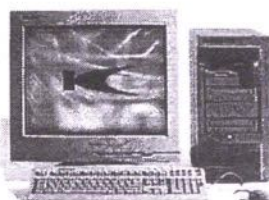
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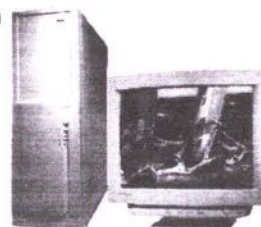


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GAMES

Tilt and swing

Continued from page 126

What's Playing sang the praises of Accolade's Jack Nicklaus 4. Can we help it if a major upgrade of golf's best simulation made such a quick appearance? No, we can't, and for several reasons JN5 simply cannot be ignored.

Stealing a page from Sierra's Front Page Sports: Golf (and Maxis' SimGolf before that),

JN5 introduces a new weapon into an already powerful arsenal—its own version of the mouse swing, the MouseMeter. It is a welcome innovation, as are ultra-lifelike 3D golfer animations, a flock of original venues and a beefier course designer.

Paired with the uncanny ball movement typical of previous Jacks, you've got perhaps the best computer golfing experience ever

assembled. I know I've said that before, but this is one hot genre spurred by titles that keep raising the stakes, and right now Jack is the best of the bunch.

Graphically, JN5 is so smooth that it's impossible not to be transported by its lush and realistically scaled environment. With no less than ten courses, the game showcases most every type of golfing landscape

you can imagine, including Lake Las Vegas, a particularly stunning example that features vivid water hazards, imposing heights, desert flora and barren rock formations.

Other worthy recreations of real life locales include the warm and inviting Cabo del Sol, tropical Hualalai, and the more traditional Colleton River Plantation and Country Club of the South. Courses that exist merely for the amusement of computer gamers include the positively tortuous Challenge at Danger Bay, the scenic Monterey Bay and the single, frigid hole of Arctic Fantasy.

Of course, playing JN5 means never having to say you're limited to pre-built designs. That's where the Course Designer comes in, and like the box says it's more powerful than ever. Start by laying the basics, then choose from a glorious selection of scenery and most any form of vegetation. Elevate a tee, redraw a green, import your own bitmap image, alter the look of the sky. The only drawback? Good design takes time, so be prepared to be patient.

When you're finally ready to hit a few, JN5 will set down just about any parameter you can think of. Are you a "pro" phenom or a "scratch" duffer? Will you hit from a long or short tee? Wanna play Stroke, Match, Best Ball, Skins, Sudden Death, or another of the eight available modes? Would you like wind or fog to come into play? Name the variable, and Jack's got it.

On the course, JN5 has thankfully forsaken the videotaped 2D golfers from installment number 4, instead substituting motion-derived animations of the fully 3D variety. The effect is, in two words, notably better, with flowing motion and realistic movements that may be monitored from myriad cameras.

Unfortunately, though preset cameras such as Tower, Aerial, Landing and even custom-placed angles heighten the TV appearance, the actual swing features just a single perspective (unlike EA's PGA Tour, for instance, which at last count sported 100 or so). The good news is that an overhead view appears to aid in shot preparation, as does the insightful and just plain funny commentary of veteran CBS golf broadcaster Gary McCord. "That one sucked like a chest wound," and "That's what we call a Bob Marley—he smoked a big one," are just two samples of McCord's welcome banter.

Yet, convincing periphery aside, JN5 rules the known golfing world simply because it's the best "playing" game there is, with wonderfully accurate ball movement throughout all phases of its travel. Balls bounce differently from surface to surface, and roll faster or slower even with the slightest alteration in grass or slope. Greens especially feature all the nuances of real life, and that does make for some difficult putting.

And that MouseMeter? Well, unlike FPS: Golf, JN5 asks for a side-to-side motion as you push to the right for the backswing, then to the left for the down. Any deviance from the straight and narrow and you'll be hooking or slicing, but you can practice swing your mouse as much as you like before letting loose. It's the only way I compu-golf now, and JN5 is the only game I use. Until the next great title, that is. □

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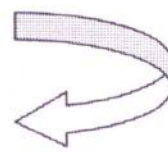
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■ TRAINING

DigiPen opens video game university

BY SAMI MENEFE

REDMOND, Wash. (NB)—DigiPen Institute of Technology has developed a highly focused curriculum for students who have an aptitude for dreaming up new games. As computers become more complex, so do gamer expectations, and DigiPen figures the ranks of gamers will provide the best new designer candidates.

The new fully accredited game-designing school actually enrolled its first 40 students in February. They can opt to receive a degree either as Associate of Science (AS), a two-year program, or Bachelor of Science (BS), a four-year program. Their diploma will read *Real Time Interactive Simulation in the World* when they pick it up at the end of the term.

Jason Chu, registrar for DigiPen, told Newsbytes: "This fall we will add more students in the same program and next September, 1999, we will start a Bachelor of Arts [BA] program that will focus on the artistic and marketing arm of the games industry."

He added: "We plan to add Master's and PhD degrees in the next two to three years."

"We have been teaching three-dimensional [3D] computer graphics for several years now at our Canadian facility. Now video games use more 3D, so there is a lot of need for 3D graphics and we need graphics artists to create the 3D images."

He added: "The BA degree gives students who want to specialize in game creation, but not the programming of them, somewhere to focus their artistic talents," said Chu.

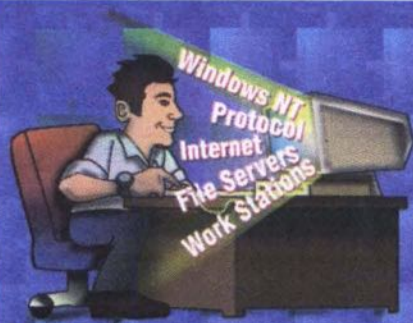
He said that each student must create, design, and implement a game to move to the next semester, with the games increasing in complexity from simple puzzles to 3D network games that can run across different platforms.

"Each level of difficulty will require different skills," said Chu.

Once all programs are in place, students will choose Science or Arts for their degree, but will be able to take classes from each area, he said. All students will get a deep grounding in the appropriate areas for their specialties, including video-game programming, data structure and algorithms, image-processing, math, physics, marketing, fine arts and, of course, mythology.

DigiPen Tech is a Washington state-accredited private school located at Nintendo of America's corporate headquarters. The

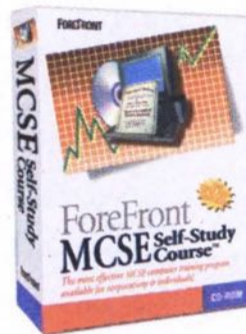
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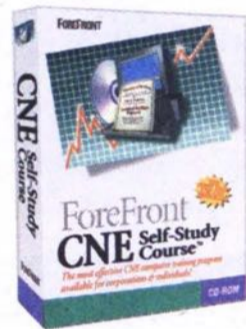
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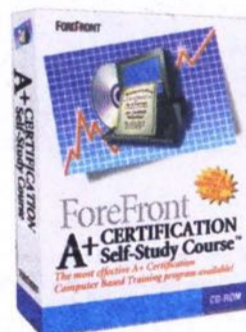
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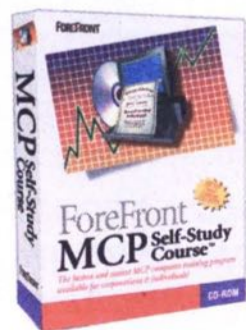


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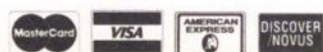
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Weaving your own Web site: Part XXXI

HTML 4.0: Part II

BY KEITH SCHENGILI-ROBERTS

Last month, we looked at some of the new tags the World Wide Web Consortium (W3C) has introduced as part of the new HTML 4.0 standard.

Currently, not all of these tags have been fully implemented within Internet Explorer or Netscape Navigator, but since both Microsoft and Netscape Communications are members of W3C, they are expected to implement them in forthcoming versions of their respective browsers.

TLC, TCB and TPC

The W3C added two tags to the HTML 4.0 specification that are ideally suited to explaining some of the many baffling acronyms and abbreviations that you can find on Web pages these days—terms like "W3C" for instance.

The abbreviation and acronym container tags have the same function: they describe their contents as being either an abbreviated term (like I/O or TV) or acronym (like FBI or RCMP). They were last-minute additions to the official HTML 4.0 specification, and are actually holdovers from the HTML 3.0 specification that never gained wide acceptance within the major browsers. At the time of writing, the abbreviation tag was still unrecognized within the major browsers, but the effects of the acronym tag can be seen in Internet Explorer 4.0.

Both tags have only one attribute, TITLE, which is used to indicate the full text of the abbreviated term or acronym. Both the TITLE and ID attributes can be used with almost any tag, but they rarely have any genuinely useful effect, and are there solely to provide extra information to a Webmaster who may be editing the code at a later time.

In this case, the TITLE attribute for the abbreviation and acronym tags displays a small pop-up window (actually a "tooltip message") that displays the content of the TITLE attribute to the viewer. So whenever the user places their cursor over the abbreviated term or acronym and the TITLE attribute is used, the

full version of the term or acronym is displayed. Unlike a link, there is no obvious indication that a term is described using either the abbreviation or acronym tag—the tooltip only appears if the user places their cursor on the term.

Here are a couple of examples to give you an idea of how these tags are supposed to be used:

- The abbreviation tag is used to indicate an abbreviated term, like `<ABBR TITLE=Light Amplification by Stimulated Emission of Radiation>LASER</ABBR>`.
- The acronym tag is used to indicate an acronym, like `<ACRONYM TITLE=World Wide Web Consortium>W3C</ACRONYM>`.

So far this feature is only supported within Internet Explorer 4.0, and only for the acronym tag. Its behavior in Internet Explorer is odd, as it does not allow for multiple words to be displayed, so for example if you had `TITLE="Keith's Vintage Radio Page"` specified in your acronym tag, only the word "Keith's" would be displayed. A way to get around this is to insert non-breaking spaces between the words, as in the following example:

- If you are interested in vintage radios, check out the `<ACRONYM TITLE=Keith's nbsp; Vintage nbsp; Radio nbsp; Page>KVRP</ACRONYM>` Web site at: <http://www.interlog.com/~kschengi/radios.html>.

In this case, the words "Keith's Vintage Radio Page" are fully displayed.

Going in two directions at once

This next tag is kind of tricky to understand at first, but for those people who mix different languages in their Web pages, the new bi-directional override tag is a handy new tool (or will be, if and when it is implemented by the major browser manufacturers). There are many languages designed to be read from right to left, such as Arabic or Hebrew, instead of left to right, which is more typical of European languages. When characters from both types of writing systems are present in a

single document, it is known as bi-directional text—some text is to be read in one direction, and some in the other direction. The bi-directional override keeps the proper placement of items contained within it; it works much like a preformatted (`<PRE>`) tag for foreign languages.

The `<BDO>` tag is a container tag used to determine the direction in which the text it encloses is to be displayed. It has a single attribute DIR, which has two possible values: LTR (left to right) or RTL (right to left). In essence, this tag is used to flip around the order of the characters it contains. So if you surrounded the English proper name "Keith Schengili-Roberts" with this tag, it would come out as: `streboR-iligneheS htiEK`. Though this may appear flashy (or just silly) on a Web page, this is not what the tag was designed for.

Here's a better example: Let's say you had the following text on a Web page: `EnglishWord1 ArabicWord2 EnglishWord3`. The bi-directional algorithm within most browsers already knows that it should display characters from a given character set in a particular direction, but it does not always know how to place things like numerals correctly in conjunction with these characters. In this case the text would actually be displayed the this way: `EnglishWord1 wroWcibarA2-EnglishWord3`. The Arabic word is displayed from left-to-right as it should be, but the number "2" now appears at the beginning of the word, so that it now reads "2ArabicWord" instead of "ArabicWord2".

This is where the bi-directional override tag should be used for explicitly setting the direction of the Arabic text, as in the following example: `EnglishWord1 <BDO=RTL>ArabicWord2</BDO> EnglishWord3`. This would display the text as it was intended, which would be like this: `EnglishWord1 2wroWcibarA EnglishWord3`. Unfortunately, at the time of writing the bi-directional override tag is not supported by any major browser.

See where changes were made

If you've ever used the Track Changes feature in Microsoft Word, or a similar feature in

other in other word processors, you know how handy it can be to see the effects of edits done to your text. If you need to indicate changes that have been made to your Web-based text, you know have two tags especially designed for the purpose, delete and insert.

Both are container tags that are meant to enclose the text that has been changed. They share the same two attributes: CITE and DATETIME. CITE points to a source document that explains why the text has been changed, and DATETIME reflects the date and time of the changes made. The official specification for DATETIME implies that any date and time value should follow this format: `DATETIME= [YYYY-MM-DD]T[HH:MM:SS]`. So minus the brackets, Feb. 9, 1998 at 7:16 a.m. would be written in the following manner: `DATETIME=1998-02-09T07:16:00`. Both attributes are optional.

Like the abbreviation and acronym tags, these are both holdovers from the HTML 3.0 specification that were never widely adopted by the browser manufacturers.

The specification does not indicate how the insert or delete tags should be displayed. Microsoft has decided that any text enclosed by the insert tag should be underlined, and that any text enclosed by insert should appear as if struck through. It should be noted that neither the CITE or DATETIME attributes have any visible characteristics, and at the time of writing these two tags are not supported within Netscape Navigator.

If you want to learn more about the HTML 4.0 specification, there's nothing like going straight to the source, which is the HTML 4.0 section of the W3C Web site at: <http://www.w3.org/TR/REC-html40/>. □

Keith Schengili-Roberts welcomes any comments, suggestions or HTML tips and tricks you may have. You can email Keith at: kschengi@interlog.com. Look for his new book, *The Advanced HTML Companion 2nd Edition* (ISBN: 0-12-623542-2), co-written by Kim Silk-Copeland, to appear in bookstores soon. Previous articles in this series can be found at *The Computer Paper* Web site: <http://www.tcp.ca/>.

DigiPen opens video game university

Continued from page 131

giant gaming firm rents classroom and lab space to the school and gives technical support and curriculum guidance as needed.

"We are in a 120,000 square foot facility and are only using 14,000 for our giant lab where the students work," commented Chu.

"We plan to keep the ratio of student to teacher at ten to one, so as the student population grows, we will hire more teachers," said Chu.

Chu said the school runs a two-year program here in Vancouver, and has graduated 44 students since 1994. (DigiPen says it will continue to offer programs in Vancouver.)

He said the expansion south of the border is due to the number of students from the U.S. and because school officials wanted "to be closer to Nintendo."

The plan, according to school officials, is to keep enrollments small, adding about 100 students each year. Tuition runs US\$300 per unit. A BS degree requires 160 units to com-

plete. An AS degree can be completed with 80 units, said Chu. □

Contact: DigiPen Institute of Technology,

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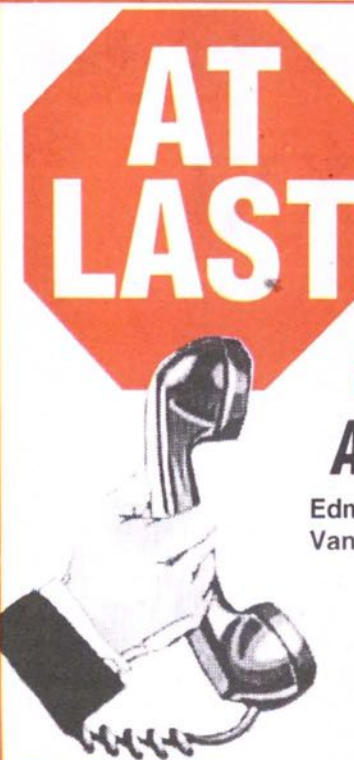
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NEWS

Bell tolls for MessagePad, Newton OS and eMate

CUPERTINO, Calif. (NB)—When remaining inventories are depleted, Apple Computer will no longer produce the company's hand-held computer, MessagePad, nor a newer educational mininotebook called eMate 300. Apple will also end more than six years of developing various versions of Newton, the operating system for MessagePad.

In a number of keynote speeches in the past seven months, Apple's interim chief executive officer, Steven Jobs, has endorsed eMate as an important product in relation to Apple's development and protection of educational market share. A new mobile computing product using a current version of the Macintosh operating system is now scheduled for a 1999 delivery, Apple said.

Included in Apple's announcement was a promise to continue support for the discontinued products.

The end of the MessagePad, often referred to as a Newton, which is an operating system for the device, seemed no surprise to Apple watchers. Last summer, Apple said the MessagePad/Newton division would be spun-off and operate as a separate division. Before a new division became comfortable off-campus, it was brought back into the Apple stable.

Industry analyst, consultant and observer Tim Bjarin told Newsbytes, "What you have to be clear on is that this does not preclude him [Jobs] from creating an eMate 500 that has the Mac OS on it."

"It is very clear he was not going to support Newton," he continued, "but the question is what do you do with it. This really goes in the direction of the strategic positioning he has which is anything that Apple has going forward has to be based on a Mac OS. It was very clear once he made that decision, Newton had no future."

What is going to happen going forward is that they don't necessarily believe that the concept of PDA (personal digital assistant) is

dead, added Bjarin. "Witness what is going on with the [3Com/USR] PalmPilot. It is the same functionality. The big problem here from the beginning was that Scully [former Apple chief executive] chose to go out and create not just a new design but a totally new OS and force people through his vision of the future and like a lot of pioneers he was too early."

"The PalmPilot is the best proof of concept for PDAs to date and I am absolutely convinced that Apple will at some point do something similarly that will either follow in the Pilot context or even the handheld, eMate concept" he claimed. "However, from this point on it has to be based on the Mac OS or it doesn't see light of day."

Mike Murphy, computer industry analyst and publisher of the *California Technology Stock Letter*, criticized Jobs actions regarding Newton, MessagePad and eMate. "Another move by Apple's destruction committee," he began. "And, remember, the Newton is the future of the company. Don't forget that one too."

"It is amazing. Apparently they [Apple] really copied quite a bit from Xerox PARC," continued Murphy. "They seem to have absorbed the knowledge on how to produce things that people want to buy ten years later when they are not manufacturing them anymore."

"I don't get it," added Murphy. "These are big decisions and they are the kinds of decisions that should be getting made by a new CEO."

"Since it is directly contrary to what everybody else thinks is the future for handheld devices, as witnessed by the two million PalmPilots that have been sold already, it is big stuff and to take that decision away from a CEO and limit him [or her] this way is like dropping all their dealers except CompUSA and start selling through the mail. It's really a puzzle to me." □

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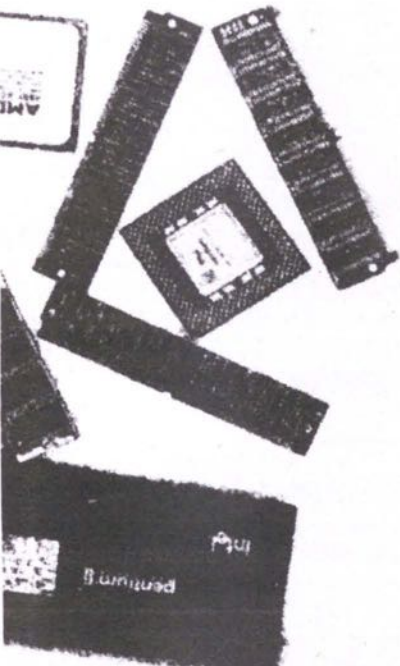
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LOTUS NOTES. - see "Pacific Notes User Group"



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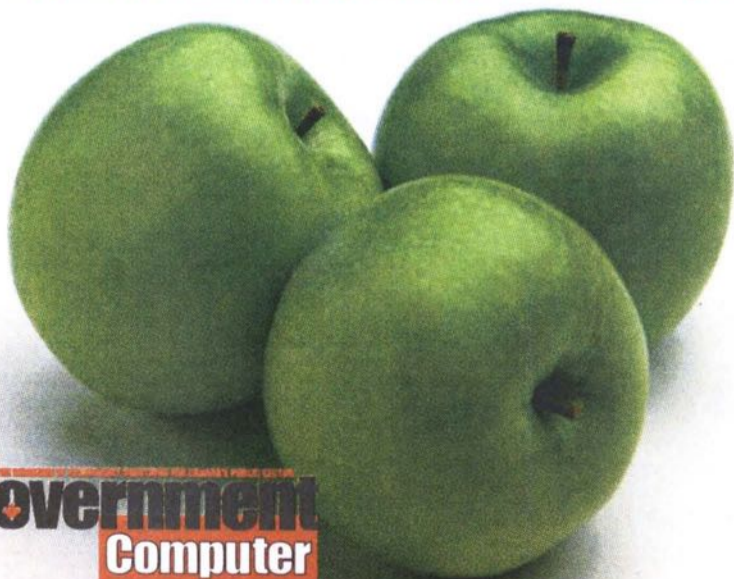
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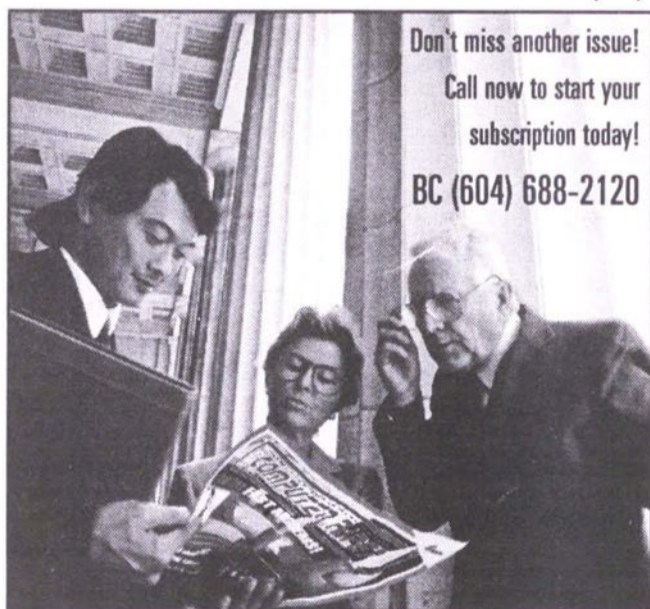


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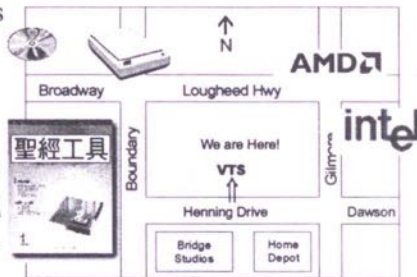
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USER GROUPS

MACWEST COMPUTER SOCIETY. Meetings for members and visitors include Shareware copy sessions, software and hardware demos, and Q & A sessions. If you use a Macintosh, check us out! General meetings: 2nd Wednesday of each month: Beginner's meetings: 3rd Wednesday of each month. 7:30pm, Surrey School Conference Centre at 9260-140th Street, Surrey. Web site: <http://www.macwest.org/usergroup/index.html>. MacWest First Class BBS modem number: 502-9593. Login as: Guest/guest. Messages and information at: 268-9530

MS ACCESS TECHNICAL USER'S GROUP. For those who want to participate in learning more about MS Access. For information call Greg Hind at 454-0262, from 9:00 to 5:00.

NANUGS (Northern Alberta Novell Users Group Society) - meets quarterly at the CompuSmart store on Mayfield Road. For information, please e-mail to nanugs@freenet.edmonton.ab.ca or phone Mike Brown (403)487-7666.

OBJECTS USER SOCIETY. See British Columbia OpenStep Group (B.C.O.G.).

OPENSTEP USER SOCIETY (VNUS). See British Columbia OpenStep Group (B.C.O.G.).

PACIFIC NOTES USER GROUP (PACNUG) - Lotus Notes users meet the last Wednesday of each month (except August and December) 5:30pm at IBM. Contact Delores Beier at 988-2141 or dbeier@aw.ca

PC/MAC USER GROUP. Wanted Professional Photography/Graphic Designers to share, network and learn the latest hardware and software programs available. Starting May 7th we will meet at 7:00pm every 1st and 3rd Tuesday of the month, at Tricera Computer Center, #203-1836 W 5th Ave. If you are interested please contact: B. Hanington at either 873-6915 or rasta@mindlink.bc.ca for further info.

NON-PROFIT PC based gaming group. Monthly events. You bring the PC, we'll supply the competition. For info, visit <http://www.Sniper.NET> or email Grimoire@Rogers.WAVE.CA

PORT COQUITLAM COMPUTER CLUB. Commodore, Amiga - IBM-Mac. 1st & 3rd Tuesday, 7:30 p.m., Room 8 Minnekahda Middle School, 1390 Laurie Ave., Port Coquitlam. Ed Dyer-Publicity at 942-0954.

T.I.99/4A COMPUTER B.C.99er Users Group. every Thursday 7-10 p.m. For information, call Ron: 522-2598.

TEENS IN VANCOUVER USER GROUP. For teens under the age of 16 interested in doing computer related projects regularly. WWW, programming, games; anything! The main goal is to share computer knowledge and to make friends. If there are any homeschoolers interested, that would be great. If interested, please call Orton Mak at 926-2835.

THE TOPKIDS CLUB. A user group for kids, teens and parents. Monthly meetings are family focused with software/hardware demonstrations, guest speakers, Windows and Mac tips and online demonstrations. A BBS is available to members. Call Garland Coulson 279-5439 or email garland_coulson@top-kids.com

VANCOUVER AUTOCAD USERS SOCIETY. 1st Wed. of the month, 7:30 p.m., B.C.I.T. Bby. Campus Bldg. SW5 Room 1850. Contact: Frank Zander (604) 582-8283.

VANCOUVER DELPHI DEVELOPERS ASSOCIATION meets once a month at the Liquor Distribution Branch Head Office in East Vancouver. The meeting is usually on the 2nd or 3rd week of the month on Tue or Wed depending on availability of facilities. The purpose of the group is to provide a common and regular forum for Delphi developers to get together and discuss Delphi related issues. All meeting notices are sent via fax or e-mail. Please contact Michael Li at mlil@infocan.com, or fax: (604)736-5866 or tel: (604)736-5888, ext:728

VANCOUVER ENTERPRISE FORUM. 432-8761.

VANCOUVER FOXPRO USER GROUP (VFUG). September-June, 2nd Tuesday, at 1900 hours; 200-1177 W. Broadway. Info Doug at 736-2922, BBS 231-9709 and e-mail to joytan@universe.com

VANCOUVER GEOWORKS USERS CLUB. For further info, please call: 683-7490 (eves).

VANCOUVER GEOGRAPHIC INFORMATION SYSTEMS USER GROUP. Meetings are held on the 1st Wednesday of each month, September through May, at B.C.I.T. Town Square Room 'C' at 7:30pm. Contact Dwight at 940-1518 for information.

VANCOUVER KAYPRO USERS GROUP-VANCOUVER PORTABLE COMPUTER CLUB (VPCC). AMO 17, friendly members, heritage CP/M software, the latest DOS and Windows files, plus inexpensive access to the planetwide FidoNet! Visitors welcome to our BBS. Contact person: Jay Siegel, 4251 Lancelot Dr, Richmond, B.C., V7C 4S4, 271-1519; BBS 271-5934.

VANCOUVER NETWORK USERS GROUP (VNUG) is an official user group recognized by the Network Users' International Assoc. and supported, in part, by Novell. Meetings are held on the first business Monday of every month at The Stanley Park Dining Pavilion. All aspects of the networking environment are discussed and presented with emphasis on the Network network operating system. The workshop begins at 4:00p.m., buffet dinner at 6:00pm, at 7:00pm is a Q&A session followed by a presentation ending at around 8:30pm. Member, no-member and student pricing applies to the workshop and/or dinner-presentation. For further information or meeting topic announcements call our voice mail at 689-VNUG (689-8684).

VANCOUVER OS/2 USER GROUP. Attended by OS/2 gurus and novices alike and well supported by IBM. The large and lively meeting is held on the first Wednesday of each month at the BC Tel Building, 3777 Kingsway, Burnaby and starts at 6:45 pm. Join us for an informal workshop beginning at 11:30 am on the first and third Saturdays of each month at Doppler Computer Superstores, 485 W. 8th Ave., Vancouver. Contact: Jim Shewchuk 876-4780.

VANCOUVER PC USERS SOCIETY (VPCUS). Meets every Thursday, 7pm at Science World, members free, \$5 guests. Excellent Q&A session & feature presentation. Our mission is to educate and inform our members and the general public on the current and future issues in personal computing, and to provide a social

context for the business, educational and personal use of microcomputers. We offer on disk newsletter, educational seminars, special interest groups (see separate VPCUS SIG listings), and more. Call 290-0660 for details and schedule.

VANCOUVER SMALLTALK USERS GROUP (VSMUG) is a group of individuals and organizations interested in object-oriented analysis, design, and programming with a particular emphasis on Smalltalk. Primarily for individual developers to meet, share ideas and experiences, discuss technical issues and learn cool stuff. It's designed not to be a forum for sales pitches from vendors. RSVP VSMUG@vcn.bc.ca or visit our web site at <http://lucy.csc.uvic.ca/~bnfb>.

VANCOUVER WINDOWS NT USERS GROUP (VANTUG) Meetings are held on the 3rd Tuesday July, Sept, Nov. at 6:30pm. Please consult our website for further information on agenda items, membership. Details or meeting locations: <http://www.vantug.com> Email Nancy Pearce, VANTUG President at Nancy@steeves.bc.ca.

VISUAL BASICS USERS GROUP is for users, developers and consultants creating consumer programs and client specific applications. Presentations by industry experts. Meets 2nd Thursday of each month at 6:00pm at Vancouver Film School, 420 Homer St. & Hastings, above Web Cafe) Vancouver, BC. Contact 324-6600 or salespro@bc.sympatico.ca for details of upcoming meeting.

VISUAL OBJECT DEVELOPERS ASSOCIATION OF VANCOUVER - For information on our next meeting, contact John Kniewasser (604) 430-8210 fax: (604) 431-3946 CIS 72120.3156

VPCUS CLARION-TOPSPEED SIG- Clarion is a full-featured, industrial-strength DOS & Windows application development tool. Its superior high level language and reusable templates produce compilable code and tight EXE's that run fast and are royalty free. This lively SIG attracts a range of participants from seasoned professional programmers to new users and the curious. Meets 2nd Tuesday of every month. Contact John Golka, 736-7762.

VPCUS DBUG SIG (Data Base Users Group) Emphasis is on solving problems of data management with special reference to Paradox. Bring a blank 3.5 inch disk to pick up goodies from the meeting. Meetings for the next few months will be informal, and held at a local pub. Contact Brad Froese, 939-3093.

VPCUS Educational Seminars - Members \$5, Non-members \$15. Various topics, times and dates. Contact Gwenda Ellwood, 737-8674.

VPCUS HTML AUTHORIZING SIG- This SIG is a good place to come for informal discussions with other HTML developers, or to get advice on building business and personal Web pages. Topics include graphics and HTML plug-ins, the browser wars, jamba, connectivity issues and marketing on the internet. Both novice and advanced HTML authors are welcome. We meet on the 2nd Tuesday of each month. Contact Brenda Delaney: bdelaney@unixg.ubc.ca or Virginia Green: virginia@arts.ubc.ca for meeting info, and to get our email list.

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VPCUS LINUX SIG-Linux is the free alternative to Windows, DOS, and OS/2. It's the tried and true Unix OS configured to run on PC's. The system is open, full featured, robust, and getting better all the time. "Most web servers run on Linux." See what makes it so attractive to those who know. Meets on the 3rd Monday of each month. Contact Stan Clauson at 532-6846, or email: clauson@direct.ca

VPCUS NETWORKING SIG- This is the place if you are a network administrator and you need a break from beating your head against a wall, or want to relate with people who actually care what you're talking about. Come and share Novell glory stories, tips, tricks and support ideas.

Currently on hiatus, we're looking for volunteers interested in getting this SIG going again. Contact Brenda Delaney: bdelaney@unixg.ubc.ca, or fax 224-2143 for more information.

VPCUS WINDOWS PROGRAMMING SIG- For programmers and intermediate to expert Windows users who are interested in PC programming, particularly in C, Access, Delphi, VB, Java, etc. Meets on the 2nd Tuesday of most months. Contact Casey Hawthorne at 879-2703, or email: caseyh@istar.ca

VPCUS WINDOWS USERS SIG- For Windows users at all levels. Learn and share tips, techniques, pitfalls, configurations, and optimizing strategies for best using WIN95. A new SIG to meet on the 3rd Wednesday of the month. Contact

Casey Hawthorne at 879-2703, or email: caseyh@istar.ca

VPCUS WORDPERFECT SIG - Participants share tips and tricks of this wonderful office product. Contact Holly Rivers at 731-0039, or email: hollyr@dowco.com

Help Desk Institute Local Chapter. An organization providing training, education and a networking forum for Help Desk Professionals. Those people who help computer users with hardware or software problems. For more information on memberships. Please send your e-mail to Karen Yuen at: KYUEN@VSE.CA

WINDOWS PROGRAMMING with Visual C++ and Assembler - A group for exchanging ideas and making contacts. For information call Reza Roboubi at 926-7529 or E-mail rezarob@geocities.com

CALENDAR

MARCH

Two Rivers Technologies two-day seminar Mastering Telecommunications Fundamentals: The basic of Voice and Data Communications will play seven Canadian Cities during March. The itinerary is Winnipeg, March 17-18; Edmonton, March 19-20; Montreal, March 24-25 and back to Ottawa, March 26-27. For more information call Two Rivers at 201-798-3311 or 201-798-3377, fax 201-798-3388, e-mail trt-seminar@aol.com or visit <http://www.tworivers-tech.com> on the World Wide Web.

APRIL

Internet & Electronic Commerce Conference & Exposition at Jacob K. Javits Convention Center, New York, NY. Monday, April 27 through Wednesday, April 29, 1998. For more information call 203-256-4700.

Comdex Spring '98-Business solutions in an internet-enabled world. April 20-23, 1998 at McCormick Place, Chicago, Illinois. For updated conference information, call the Conference Hotline at 781-433-1650. Register today: www.comdex.com or register by fax at 781-449-2674. Mail your completed registration form to: Registration Department, Comdex/Spring '98, 300 First Avenue, Needham, MA 02194-2722 USA.

Advanced Information technologies will run a two-day seminar on Systems Testing & Quality Assurance Techniques in four Canadian cities during April. The schedule is Montreal, April 15-16; and Vancouver, April 23-24. Ottawa, March 26-27. For information call 800-882-8684 or visit <http://www.iqpc.com/ait> on the World Wide Web.

MAY

Electronic Entertainment Expo 1998 by Interactive Digital Software Association from May 28-30, at the Georgia World Congress Center-Atlanta, GA. Pre-registration - \$340 for Super Pass, \$195 for Conference Package, \$195 for Workshop Package \$45 for Exhibits only Package. Free pass to exhibits only for interactive entertainment industry members. To register contact: IDG Expo Management, Tel: 800-315-1133 or via www.e3expo.com.

BC's Business start up and Opportunities Expo at the Hotel and Conference Centre, 1400 Robson Street, Vancouver, BC. May 29-31, 1998. For more information call Donald M. Burdery at 604-737-6000, email: mxy@comserve.com. Visit us at: <http://www.comserve.com/mxy>.

Canadian Wireless Telecommunications Association-Annual Convention & Trade Show, May 19-22, 1998 at Metro Toronto Convention Centre. For further information please visit the Web Site: www.cwta.ca

Multimedia Trade Show : May 13-May 15, 1998 and Conference May 12-May 15, 1998 at Metropolitan Toronto Convention Centre 255 Front Street, West Toronto, Ontario. For further information, please contact: Karl Elchner at 416-447-5638 or fax: 416-447-5638 e-mail: kelchner@istar.ca Web <http://www.newmedia.ca>.

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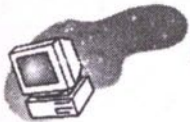


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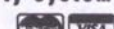
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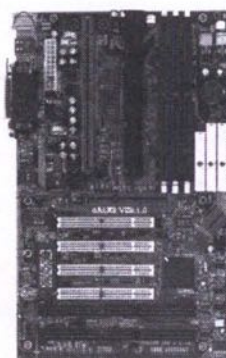


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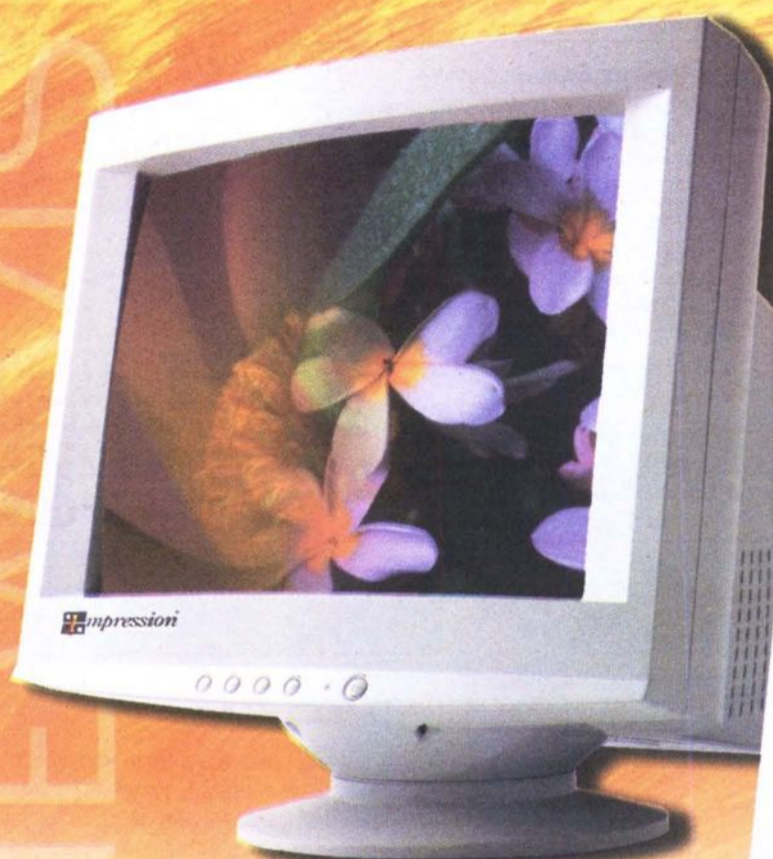
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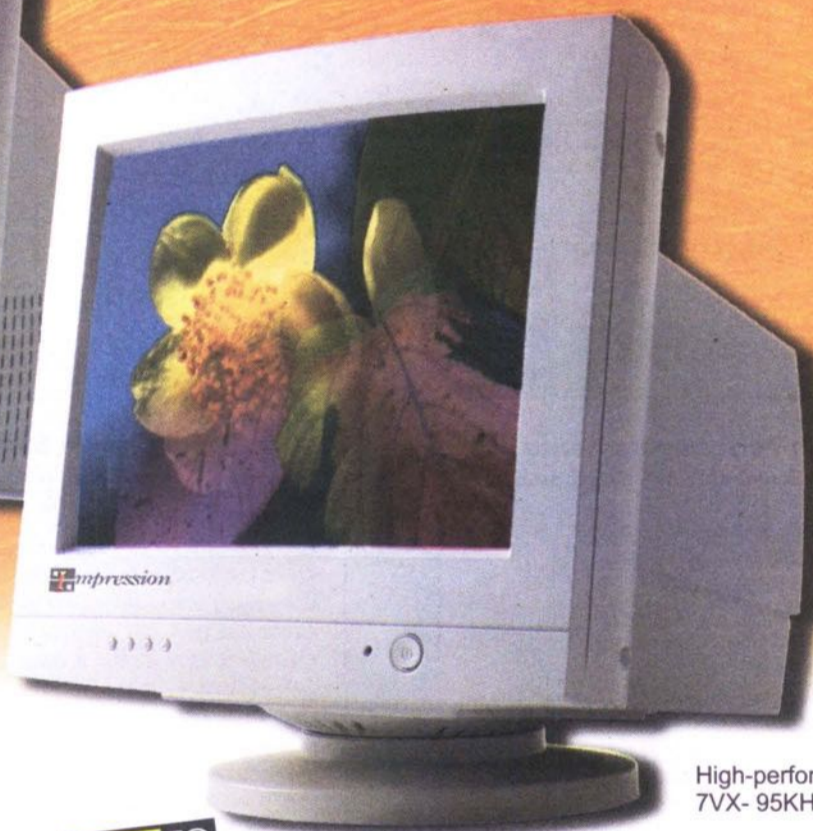
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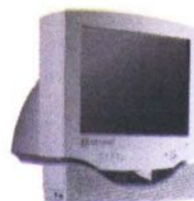


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Monopoly money: the rich get richer...



JEFF EVANS

In last month's *Last Byte*, we looked with a skeptical eye at those who are pursuing Microsoft with an often greedy or politically-based vengeance. Some gentle readers might have suspected us of being secret

shareholders of Microsoft, or biased towards worship of The Mighty Bill.

Nothing could be further from the truth. Rather, although Microsoft is spectacularly profitable and influential, its ever-rising level of wealth and power is part of a general trend in the computer industry: a trend towards fewer and bigger companies dominating the mainstream of information technology. This corporate concentration is a common, and unpleasant, feature of a "mature" industry in the capitalist system.

There were hundreds of carmakers in Canada and the United States in the first quarter of the 20th century; now there are only a few. A recent *Scientific American* article examined Microsoft's growth in terms of a theory of "natural monopoly." For a bunch of reasons, not least the frustration of consumers with the chaos and lack of standardization that comes with a multitude of proprietary, incompatible products, there is often a tendency for the market to bet on one vendor or technology, making it a de facto standard.

This happened in the PC sound card market, with Creative Labs' Sound Blaster line. A standard may not be the "best" technology (think of the Beta versus VHS videocassette war in the 1970s and 1980s), but once a majority of the market has committed to one supplier, or one operating system or one computing platform (PC versus Mac), it is increasingly difficult for other brands to compete. The slogan of the personal computer industry is increasingly "get big or die."

How to get big

In February, the computer industry buzzed with the news that Digital Equipment Corp., one of the most respected names in large scale corporate computing, had been bought by one of the Windows PC upstarts, Houston-based Compaq.

For US\$9.6 billion, Compaq bought out Digital's shareholders, and announced that it intended to absorb Digital's product lines and other assets into the Compaq organization and brand name. This buyout followed other Compaq acquisitions, including the purchase of Tandem Computers seven months ago, and the purchase of a range of networking and computer component makers over the past two years. Compaq is now the second largest computer firm in the world, after IBM.

How to die even if you are big

Ironically, Digital dug its own grave as an independent player when it made a far-sighted strategic alliance with Microsoft over two years ago. At that time, Digital's biggest money-making products were servers and workstations based on its proprietary VMS technology, and on a certain flavor of the UNIX operating system.

Digital's senior management foresaw that Windows NT had a chance to become a big part of the enterprise computing market by the end of the decade. So, the company decided to get good at NT, and to offer NT solutions along with VMS and UNIX solutions to its *Fortune* 1,000 clients. This vote of confidence from Digital was a huge boost to Microsoft's credibility in the corporate market, worth literally billions of dollars to Microsoft's chief executive officer Bill Gates. If a famously smart, cool and reliable company like Digital was willing to bet big time on NT, that was good enough for many corporate information officers. NT was in.

Digital became the biggest vendor of NT server licences, and trained thousands of technicians and sales people to support Windows NT in corporate computing operations. To Compaq, the combination of Digital's UNIX expertise and the best Windows NT sales machine in the world was irresistible. For under US\$10 billion, Compaq has bought a highway into the heart of corporate computing around the world. Over the next decade, Compaq will work on its Digital customer base, aiming to switch it from UNIX and VMS to Windows NT.

I had a chance to ask Bill Gates about the effect of the Compaq/Digital merger on Windows NT and UNIX a few days after the merger occurred. He said that UNIX would be around for quite awhile, but Windows NT would definitely get a boost from this particular consolidation. When I talked to Peter Ciceri, the new head of Compaq Canada (a man bringing plenty of mainframe computing experience from years with Sperry/Univac, Hewlett-Packard and Tandem Computers), he was very straightforward about Compaq's goal. Compaq, he said, is now poised to compete aggressively in the entire spectrum of computing from mainframes through servers, workstations, business PCs and networks, home computing, notebooks, and handheld devices.

And the beat goes on...

Consolidation is rapidly occurring in other sectors of computing. Adobe, the graphics software giant, is gobbling up market share from long time competitors such as Ottawa's Corel Corp., and desktop publishing rival Quark Inc. Adobe has switched its major focus from the traditional Mac graphics market to Windows and to the Internet, the two sectors experiencing the most new growth in graphics software.

In the notebook PC market, the top three notebook vendors, Toshiba, Compaq and IBM, command about 65 percent of sales. The next five, Dell, NEC, Eurocom, Apple, and Acer, account for over 20 percent. All the other notebook makers are scrambling over the remaining 12 to 14 percent of the market.

The number of Internet service providers (ISPs) has dwindled in many North American markets, due either to buyouts (such as the purchase of parts of CompuServe by WorldCom, or the purchase of iStar by PSINet), bankruptcies, and the entry of major corporations into the market (such as the Sympatico, or Rogers WAVE services, fronted by telco and cable TV consortiums, respectively).

Hard drive makers are consolidating, along with modem manufacturers, graphics card makers, and CD-ROM manufacturers. What is new about the current wave of consolidation is that in many cases it is the relatively new brand name PC companies that are growing, at the expense of both ends of the market. On the one hand, older companies at the high end (former mainframe and workstation makers like IBM, Sun and Silicon Graphics) have a lot to lose. As well, growth of brand name PC companies is at the expense of very low-end, low-priced "clone" PC makers.

Putting their brand on the market

End users' desire for security is part of what drives the trend towards monopoly. During the late '80s and early '90s, it appeared that clone PC makers had the "first tier" PC makers (such as Compaq and IBM) on the run. The cloners could slap together a boxful of "parts of the week," and beat the brand names in price/performance with ease.

However, as the concern over total cost of ownership (TCO) of PCs increased, large corporate customers insisted on buying security by buying from big brand name companies with good support and warranty programs, and reputations for quality. The little guys in the PC field are increasingly squeezed into the low-price, low-margin entry-level consumer PC ghetto.

The monopoly tax

We all pay a price whenever an industry matures and becomes concentrated into a few gigantic firms. Huge firms often lose sight of customer needs, and try to force products on the market, rather than listening to what people want. Past a certain point, customers' real choices may become very limited, reduced to



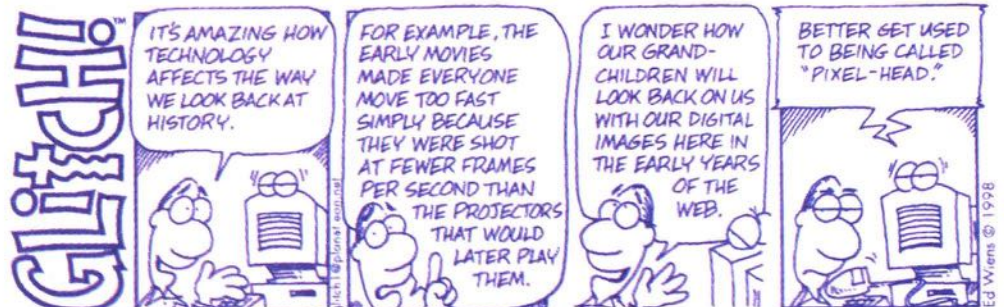
a few brand names, at inflated prices. Most significantly, innovation can be strangled by monopoly.

IBM, Apple and Xerox for example, all had marvelous research and development facilities, but attempts to bring revolutionary new products to market were often shot down or bungled by internal political wrangling. Managers and stockholders in each company who benefited from the existing cash cow product lines wouldn't allow cheaper, better, competing products to emerge from internal research and development. IBM was well on the way to monopolizing the computing industry when its cart was upset by the uncontrollable rise of the PC.

The dead hand of the state

One alternative to computing's free market turning into a very unfree monopoly or oligopoly (a de facto monopoly by a handful of companies) is a government-regulated market that prevents any player from becoming too large. Sometimes, careful and sensible government intervention is a good thing. However, the history of government management of economies is characterized by all the evils of capitalist monopolies, plus many more that are unique to governments (which can easily become economic and political monopolies, indifferent to either the market or the electorate).

The best remaining hope for preventing a fossilized, user-unfriendly PC industry controlled by a handful of greedy, doddering corporate giants is rapid, continuous change. As long as there is a flood of unexpected technology appearing out of tiny startup companies, research labs, basements and garages across the globe, none of computing's new giants can ever afford to sleep soundly. □



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